

Section 3 Historic Background

[Note: As described in the AIS Research Design and Methods Section, below, this historic background section will be augmented in the subsequent AIS report through the incorporation of the results of Kumu Pono Associates and SRI Foundation's ongoing TCP/ethnographic/ethnohistoric studies for the City Center vicinity.]

3.1 Kalihi

3.1.1 Early Historic Period

By the time the islands were found by European explorers, Kalihi Valley had a large resident population supporting themselves by extensive agricultural developments along the valley floodplains. Evidence of the religious and political aspects of Hawaiian society are noted in the descriptions of various Kalihi *heiau*, trails connecting Kalihi to other O'ahu population centers and island districts, and fishponds along the shoreline where Kalihi Stream meets Ke'ehi Lagoon.

Otto von Kotzebue's journal and map of Honolulu provide one of the earliest accounts of the environs of seaward Kalihi circa 1817. The following account is of a trip toward Pearl Harbor commencing near the mouth of Nu'uuanu Stream:

The way now lies to the west, through a beautifully cultivated valley, which is bounded towards the north by romantic scenery of woody mountains, and on the south by the sea. The artificial taro fields, which may justly be called taro lakes, excited my attention. Each of them forms a regular square of 160 feet, and is enclosed with stone all round like our basins. This field, or rather this pond . . . contains two feet of water. In the spaces between the fields, which are from three to six feet broad, there are very pleasant shady avenues, and on both sides bananas and sugar cane are planted. . . . [T]he fish which are caught in distant streams thrive admirable when put into them. In the same manner as they here keep river-fish, they manage in the sea with sea-fish, where they sometimes take advantage of the outward coral reefs, and draw from them to the shore a wall of coral stone. Such a reservoir costs much labor, but not so much skill as the taro fields, where both are united, I have seen whole mountains covered with such fields, through which the water gradually flowed; each sluice formed a small cascade, which ran through avenues of sugarcane, or banana into the next pond, and afforded an extremely picturesque prospect. Sugar plantations and taro fields alternately varied our way, with scattered habitations, and we had gone unawares five miles to the large village of Mouna Roa [Moana-lua]. . . ." [Kotzebue 1967:339-341].

Kotzebue's map of Honolulu (see Figure 10), although undoubtedly somewhat schematic, shows large taro fields (and trees) similar to his written description on both sides of the mouth of Kalihi Stream extending to the coast. The Kotzebue map also appears to show a network of fishpond walls completely sealing off the shallows in the vicinity of the mouth of Kalihi Stream. If the fishpond wall to the southwest of Kalihi Stream, corresponding to the wall of the Loko Weli fishpond, is drawn fairly accurately, then the coastal area may have been mostly impounded coastal shallows in 1817. While Kotzebue appears to show no houses amongst the *lo'i kalo*

(irrigated taro patches) at the mouth of Kalihi Stream, he does show four huts on the islet (Moku Moa) just offshore. The path shown was probably the main trail and the route traveled by Kotzebue himself.

In his history of Hawai‘i, written in the 1860s, John Papa ‘Ī‘ī describes the appearance of the trail (around the year 1810) from Nu‘uanu to Moanalua:

When the trail reached a certain bridge, it began going along the banks of taro patches, up to the other side of Kapalama, to the plain of Kaiwiula on to the taro patches, up to the other side of Kapalama, to the plain of Kaiwiula; on into Kahauiki and up to the other side; turned right to the houses of the Portuguese people. . . . [‘Ī‘ī 1959:95].

While somewhat general, the ‘Ī‘ī account supports that of von Kotzebue in relating an abundance of *lo‘i* where the main trail crossed Nu‘uanu Stream, a relatively uncultivated plain as the trail traversed Kapālama and Kaiwi‘ula, and then more *lo‘i* on Kalihi Stream.

E. Craighill Handy noted the presence of these taro fields still existing in the 1930s. These fields would have been mainly in Kalihi Kai and Kalihi Waena.

Extensive terraces covered all the flatland in lower Kalihi Valley for approximately 1.25 miles on both sides of the stream. Above this the valley is too narrow for terraces for a mile or more; but in upper Kalihi there are numerous small areas that were developed in terraces [Handy 1940:79].

Charles R. Malden mapped the south coast of O‘ahu and Honolulu Harbor in 1825 (Figure 13), depicting the coast of Kalihi (which he labels “Kariki”). He shows three fishponds, which probably correspond to (from west to east) Apili Pond, Pāhou Pond, and Pāhouiki Pond. His map illustrates the very extensive coastal flats with a wide expanse “dry at half tide” but through which there was “a passage for canoes at H. W. [high water].” He shows a hut located nearly a mile off-shore on the intertidal shallows of Kalihi.

F. D. Bennett (1840:Vol. I:202) offered the following account of Kalihi Valley c. 1834:

The valley of Kalihi succeeds to that of Anuuana [Nu‘uanu], but is less bold and diversified in its scenery. Human dwellings and cultivated lands are here very few, or scattered thinly over a great extent of, probably, the finest soil in the world. The commencement of the valley is a broad pasture-plain, the tall grass waving on every side, and intersected by a foot-path, reminding one forcibly of the rural scenes which precede the hay-harvest in England. Kalihi has a pass to the vale of Kolau similar to the pari [pali] of Anuuana, though more precipitous, and only employed by a few of the islanders who convey fish from Kolau to Honoruru. . . .

Numerous taro pond fields, or *lo‘i*, were claimed during the *Māhele*, particularly along the Kalihi and Niuhelewai Streams, which served as the eastern and western boundaries of Kalihi.

However, on the flat of Kaluapuhi where Kalihi Kai meets the ocean, there is no indication of taro *lo‘i* or fresh water sources.

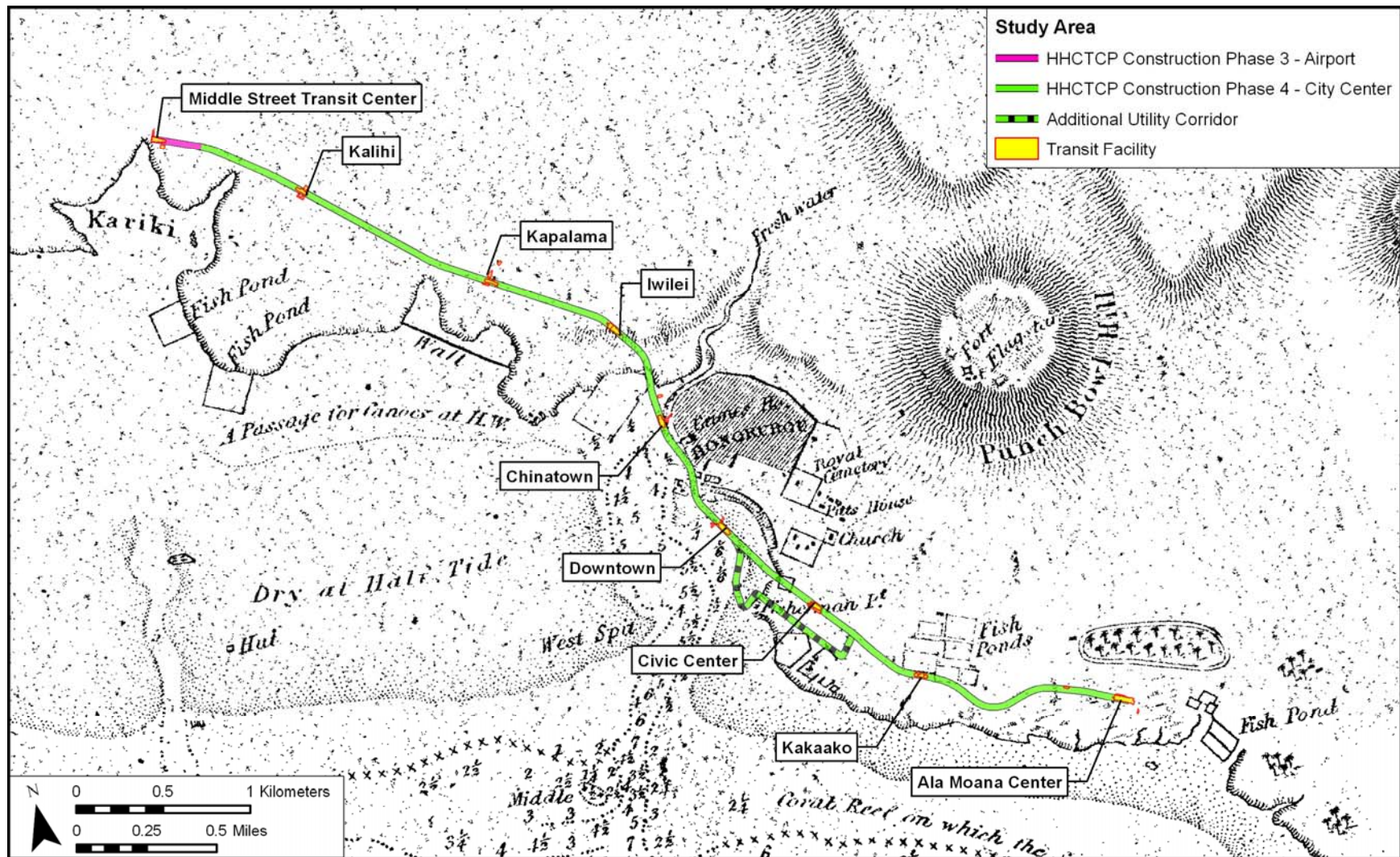


Figure 13. 1825 map of the South Coast of Woahoo [O'ahu] by Charles R. Malden, a lieutenant on the English ship, H.M.S. *Blonde*

E. S. Craighill and Elizabeth Handy supply the following description of Kalihi in the time of native planters:

Kalihi had a shallow seaside area, now the shore of Kalihi Basin, that was, like that of Moanalua, ideal for the building of fishponds, of which there were six. On the flatlands below the valley there were extensive terraces on both sides of the stream, while along the stream in the lower valley there were numerous areas with small terraces. The interior valley was rough and narrow and not suitable for *lo 'i*, but it would have been good for sweet potatoes yams, wauke, and bananas which probably were planted there [Handy and Handy 1972:475].

Several early photographs (Figure 14 and Figure 15) show habitations along the streams.

The United States Fish Commission Report for 1903 (Cobb 1905:748) lists 12 fishponds on the periphery of Ke'ehi Lagoon that were in operation in 1901, with a total of 857 acres. Cobb lists the acreage of the five Kalihi Ponds as follows:

<u>Kalihi Fishponds</u>	<u>Acreage</u>
Apili	28
Pāhounui	26
Pāhouiki	14
Auiki (partially filled)	12
Ananoho	52

These fishponds are shown on an 1897 map of Honolulu by M. D. Monsarrat (Figure 16). A paleo-environmental study of Auiki and Ananoho *loko* (ponds) (Athens and Ward 2002) concluded that the fishponds were probably constructed sometime between the 16th and 17th centuries. Toward the end of the 19th century, their use became more commercial. By 1901, Loko Auiki had been partially filled. This may have been the result of lack of maintenance or reflect patterns of infilling, as was beginning to occur at the nearby Kewalo Basin (Honolulu Harbor). Ananoho and Auiki were completely filled during World War II, at which time an Army port and warehouse complex was built (Athens and Ward 2002:1). Later, this became part of the Kapālama Military Reservation.

3.1.2 LCA Documentation

Records of the Land Commission Awards (LCAs; see Appendix A for a more complete introduction to land documents) associated with the Kuleana Act of 1850 allow us to reconstruct something of the land use pattern in Kalihi at that time. Undoubtedly residential patterns had changed from pre-Contact times as a result of massive depopulation owing to introduced diseases on the one hand and in-migration into greater Honolulu from out-lying areas on the other. The pattern of land holdings circa 1850 suggest the majority of Hawaiians in the *ahupua'a* were living relatively close to Kalihi Stream, inland of present day Dillingham Boulevard and seaward of the confluence of Kalihi and Kamanaiki Streams. Coastal habitation was somewhat less than might have been expected. This may have been because the coast was exposed to occasional storm surf, high winds, tsunamis, and hurricanes or it may have reflected a cultural pattern in which relatively few people lived close to fishponds. It may simply have been an avoidance of the low-lying coastal mudflats that were close to the water table.

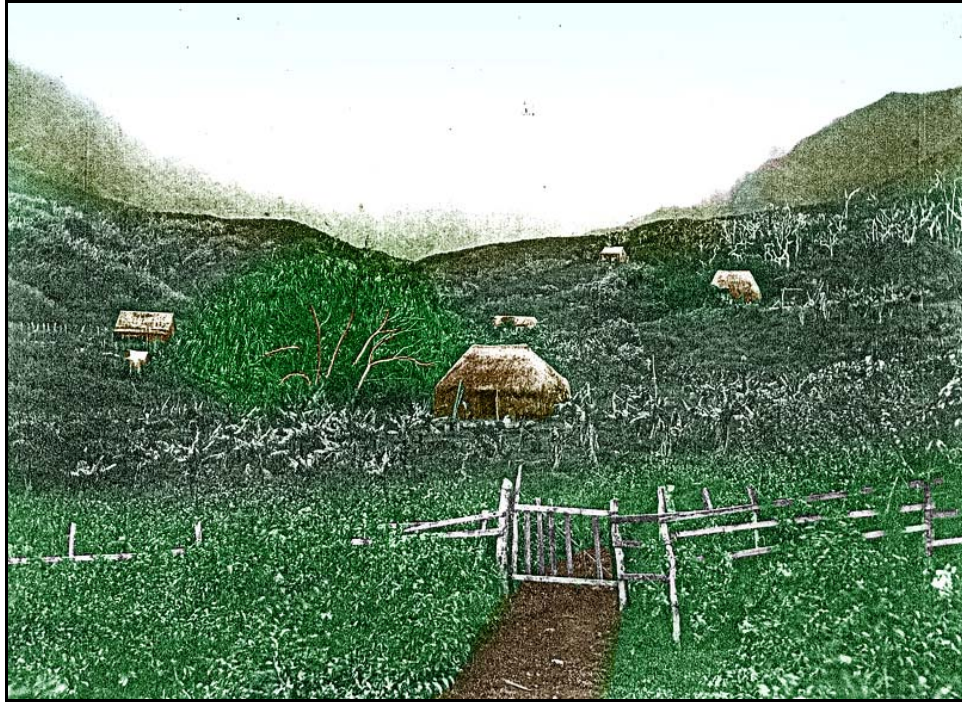


Figure 14. 1884 (circa) photograph of grass shacks in Kalihi Valley (colorized in Photoshop software for contrast) (Hawai'i State Archives)



Figure 15. Photograph of Kalihi Valley, taken between 1883-1905 (Bertram Collection, Hawai'i State Archives)

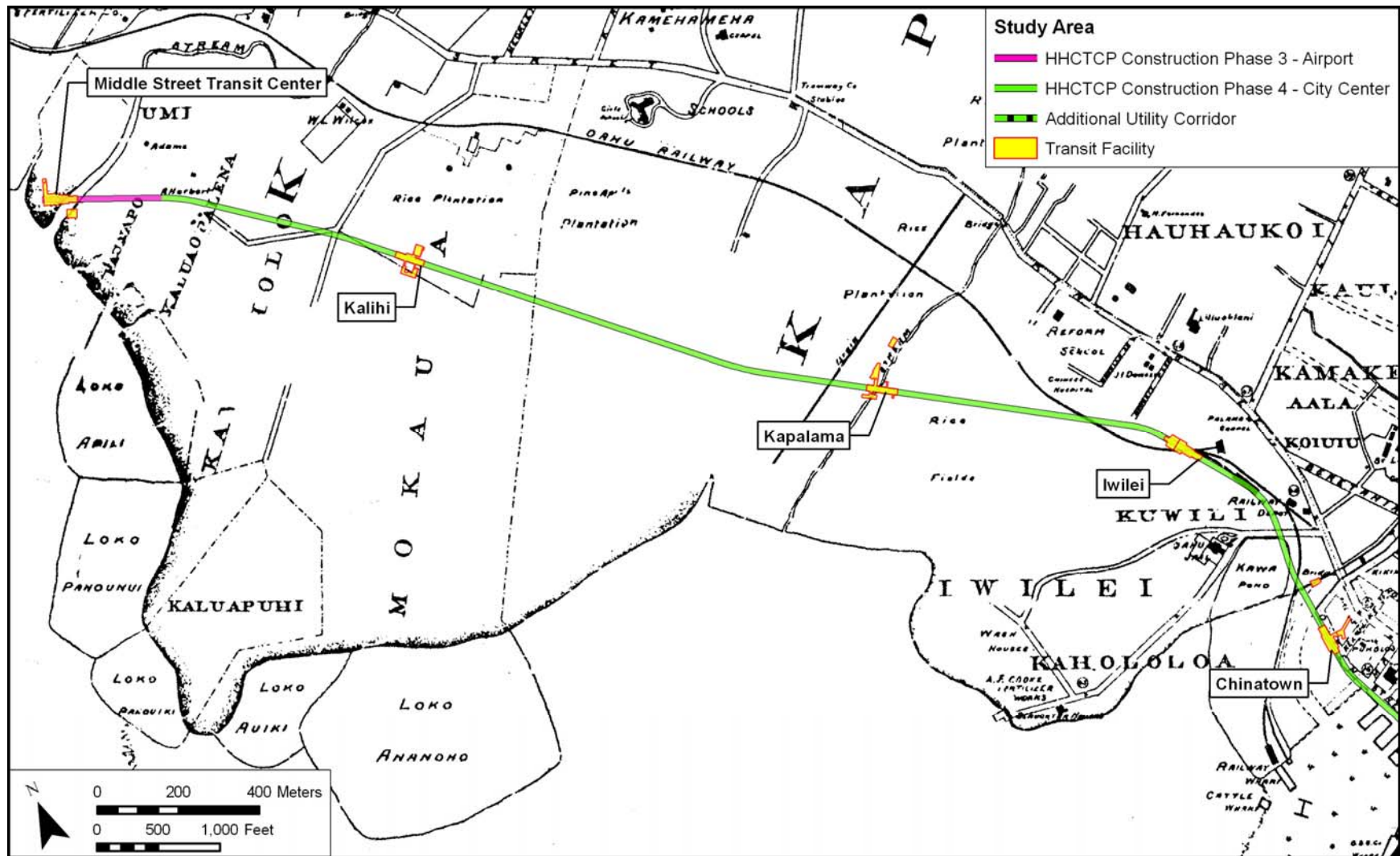


Figure 16. 1897 Map of Honolulu by M. D. Monsarrat (Reg. Map 1910), showing the location of the northwestern portion of the study area and traditional Hawaiian fishponds (*loko*) in the vicinity

Most Kalihi LCAs (see Appendix B) consisted of four to seven *lo'i* (irrigated taro ponds), *kula* (dry fields for pastures and dry-land crops), and a house lot. The gardens described are predominantly *lo'i*, etched into the surface of the alluvial stream terraces and interconnected by elaborate systems of *'auwai*. Ocean resources were farmed as well; five of the twelve large fishponds bordering Ke'ehi Lagoon were located along the Kalihi shore. In addition, salt was harvested on lands just Koko Head (east) of Kalihi Stream. The pattern of land award distribution shown in the LCAs infers that the traditional Hawaiian practice of maintaining residences dispersed within and throughout their agricultural fields continued in Kalihi at least until the mid-nineteenth century.

Lands in Kalihi Kai, the area which encompasses the western end of the study area, were awarded to advisors to the Kamehameha line and members of royalty (*ali'i*). This trend is reflected in the LCAs in the vicinity of the project alignment; land awards along the corridor between the Middle Street Transit Center and Kalihi Station consist of large parcels of land granted to *ali'i* and to foreign advisors to the throne (Figure 17 and Table 2). Land use indicated in the LCA documentation consisted of *lo'i*, *kula*, and aquaculture via fishponds. Of note is the mention of *pō'alima* (land worked for the *ali'i*) within LCA 10498, further illustrating the presence of high ranking government officials and *ali'i* in this area.

LCA 6450 was awarded to Kaunuohua, a high ranking female *ali'i* of Hawai'i Island, and the guardian of Kamehameha IV. Although she had many lands prior to the Māhele, or the division of lands in 1848, most of these were lost. The three exceptions were Pu'ulena in Waikīkī, Mokauea in Kalihi, and Kalaupapa on Moloka'i (Kame'eleihiwa 1992:249).

Hewahewa, a descendant from the Paoa priestly class who served three of the Kamehameha's, was awarded the *'ili* of Kaluapulu in Kalihi, which included fishponds at Kalihi Kai (Kamakau 1992; LCA 3237). A second *kahuna* (priest; expert) of the same Hewahewa line, Nahinu, was also awarded lands in Kalihi (LCA 10498) near the outlet of Kalihi Stream (Bushnell and Hammatt 2002:6). Nahinu also served as *konohiki* (foreman) for Kalihi Kai during the time of the Māhele (Landrum and Klieger 1991:22-23). Kamakau mentions the two *kahuna* as contemporaries skilled in diagnosis of illness:

Boki returned and lived at his place at Beretania and devoted himself to medicine, in which he was proficient, and all those joined him who were skilled in placing pebbles [in diagnosis], such as Kaao, Kuauau, Kinopu, Kahiole, Nahinu, Kekaha, Hewahewa, and their followers and other kahunas besides [Kamakau 1992:291].

Apparently, *kahuna* were given lands near fresh water because it was important for them to practice their *ho'oponopono* (spiritual consultations) there (Bushnell and Hammatt 2002:6).

Captain Alexander Adams (LCA 803) and George Beckley (LCA 818) were also awarded large parcels of land in Kalihi Kai. Adams befriended Kamehameha I, who made him the captain of his personal fleet of ships. In 1816, he sailed the *Kaahumanu* to Kaua'i to expel the Russians from their forts on that island. In 1817 he sailed to Canton on the *Forrester* to sell a load of sandalwood for the king. During Kamehameha II's reign, he encouraged the king to allow the first American missionaries to stay in the islands and helped design the Hawaiian flag, placing the Union Jack in one corner. In 1823, he became the first official pilot for Honolulu Harbor, a job he held for 30 years.

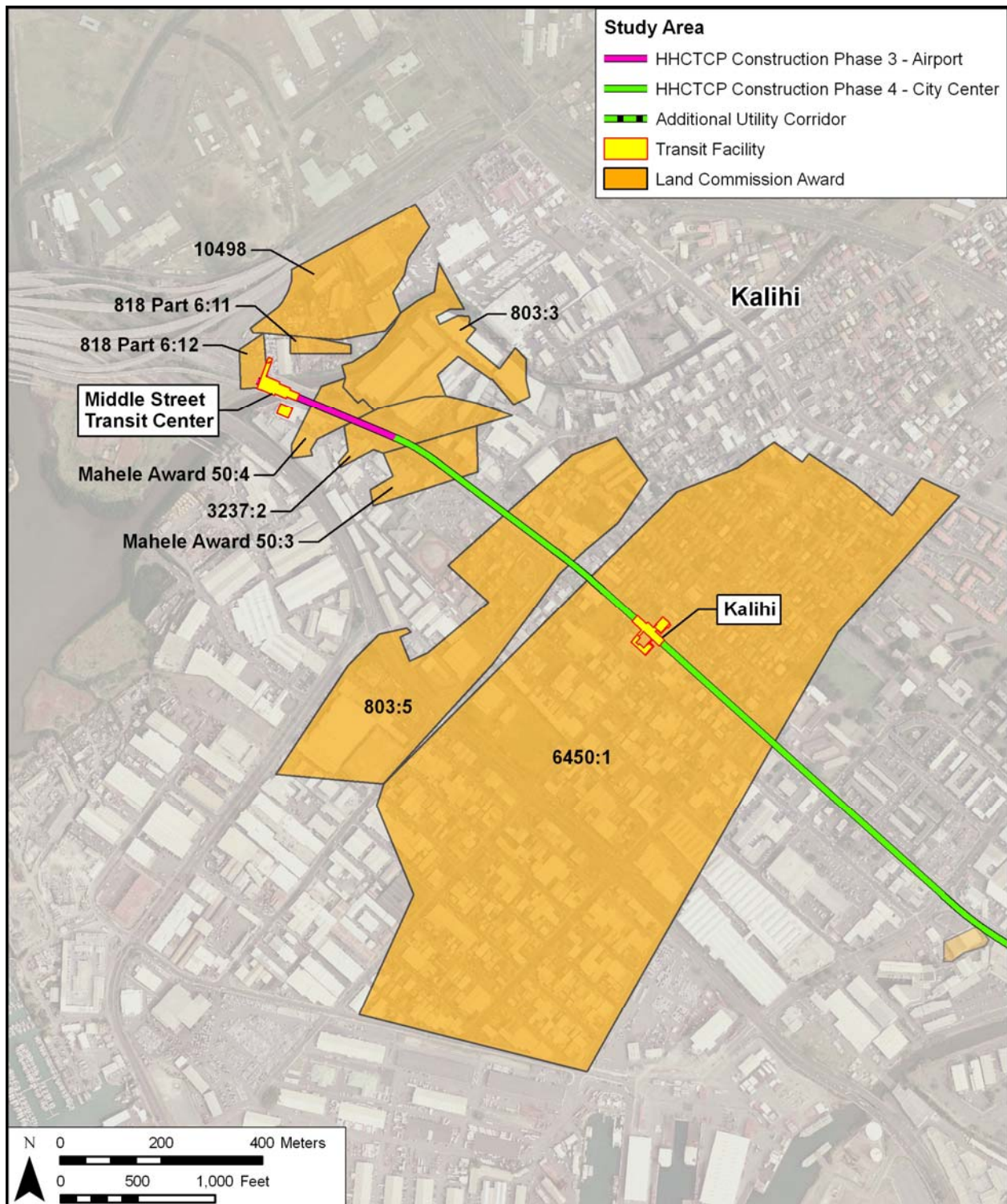


Figure 17. Aerial photograph (source: U.S. Geological Survey Orthoimagery 2005), showing the locations of Land Commission Awards (LCAs) in Kalihi near the study area

Table 2. LCAs in Kalihi in the Vicinity of the Study Area (in numeric order)

LCA Number	Contents of Award
803	<i>lo‘i</i> , pastures (<i>kula</i> land), and <i>loko</i> (fishpond) (292.41 acres). Awarded to Alexander Adams.
818	One farm with the fishing grounds called Kaliheawa, situated in Kalihi. Awarded to George Beckley
3237	Lot awarded to Hewahewa. No description of land use in award.
6450	<i>‘ili</i> of Mokauea (737.76 acres) awarded to Kaunuohua. No description of land use in award.
10498	Six pō‘alima [land worked for the ali‘i] kalo patches and one pasture. Awarded to Nahinu.

Beckley, like Adams, had served under Kamehameha I and II as a harbor pilot and as the commander of the Honolulu Fort from 1816. He died in 1826, but his heirs were awarded 70 acres. An interesting aspect of George Beckley’s land documents is the assertion in the Foreign Testimony for LCA No. 818 (see Appendix B, LCA transcription) that “...I request my executor to have my body decently interred in the house I have commenced building...” It seems most likely that this was in reference to his “premises situated at Honolulu” and not to his Kalihi “farm.”

3.2 Kapālāma

3.2.1 Early Post-Contact Period

The *ahupua‘a* of Kapālāma is between the *ahupua‘a* of Nu‘uanu to the east and Kalihi to the west. Although Kapālāma is not a major river valley like Nu‘uanu or Kalihi, it is watered by two smaller streams, the Kapālāma and Niuhelewai. The shore frontage (presently “Kapālāma Basin”) is part of the Honolulu Harbor protected shoreline. Kapālāma Ahupua‘a offered desirable environmental conditions for traditional Hawaiian subsistence practices. The well-watered floodplain would have allowed for the development of an extensive *lo‘i* system, and the protected shoreline and fringing reef would have allowed for ease of ocean access to the productive near-shore fisheries. E. S. Craighill Handy, who gathered information on former planting areas from local informants in the 1930s and 1940s, reported the following:

Kapalāma had two streams watering its terrace area [for taro], which was almost continuous from Iwilei up to the foothills above School Street, an area measuring about three quarters of a mile both in depth inland and in breadth [Handy 1940:79].

The lower lands were used for taro cultivation; the uplands also had considerable resources. In the early 19th century, sandalwood trees were still present in the forests. These trees were extensively harvested between 1810 and 1830 as the fragrant wood could be sold to ship captains sailing to China to trade for exotic Asian goods.

Otto von Kotzebue’s journal and map of Honolulu provide one of our earliest accounts of the environs of seaward Kapālāma circa 1817 (refer to the quoted text earlier in this section [Kotzebue 1967:339-341]). Kotzebue’s 1817 map of Honolulu (see Figure 10), shows large taro

fields (and trees) on both sides of the mouth of Kalihi and Nu'uaniu Streams extending to the coast. The path shown was probably the main trail and the route traveled by Kotzebue himself. The 1817 map does not show any taro fields in Kapālama, but a later 1855 map by La Passe (Figure 18) does show extensive taro *lo'i* (irrigated patches) in the *makai* section of Kapālama. La Passe's map also shows two fishponds, Kūwili I and Kawa. These ponds are on the eastern side of Kapālama, but the land around it was considered part of Kūwili, an *'ili* of Honolulu rather than Kapālama. Note that the study area traverses both of these fishponds.

Kūwili [Kūwili I] Pond is classified as a Type II pond (Kikuchi 1973), a *loko pu'one* or *loko hakuone*, an isolated shore fishpond usually formed by the development of a barrier beach building a single, elongated sand ridge (*pu'one* or *hakuone*) parallel to the coast. It was adjacent to Kawa Fishpond, a Type I pond, a *loko kuapā*, a fishpond of littoral water whose side or sides facing the sea consist of a stone or coral wall containing one or more sluice grates (Kikuchi 1973:227-228).

Fishponds of Types I and II had the largest variety of fish as food resources. The most common ones were the fish called *āholehole* (*Kuhlia taeniura*, *Kuhlia sandwichensis*, etc.); mullet; tenpounder; milkfish, *'awa'aua*; barracuda (*Sphryaena barracuda*), *kākū*, anchovy (*Anchoviella purpurea*), *nehu*, the fish identified by the Hawaiians as *'o'opu*; and the eel, *puhi*. The uncommon fish were: amber fish (*Caranx mate*), *kahala*; goatfish (*Upeneus prophyreus*), *kūmū*, three surgeonfish called *manini*, *palani*, and *puwalu*; bonefish; parrot fish, and crevally [Kikuchi 1973:93].

In 1869, Samuel Kamakau described the *loko pu'one*:

The *pu'one* ponds near the sea (*loko kai pu'uone*) were much desired by farmers, and these ponds they stocked (*ho'oholo*) with fish. *Pu'uone* ponds were close to shore ponds, *loko kuapa*, or to the seashore, and next to the mouths (*nuku*) of streams. The farmers cleared away the *mokae* sedges, *'aka'akai* bulrushes, and the weeds, and deepened the pond, piling up the muck on the sides, until he had a clean pond. Then he stocked it with *awa* fish. After two or three years the fish from the first gourd would have grown to a *ha'ilima* (18inches) in length [Kamakau 1976:49].

Kamakau noted that there were often structures on or near the ponds, *hale kia'i*, or guard houses, where the fishpond keepers would stay on certain nights to deter poachers.

On the nights when the tide was high every *kia'i* (keeper) slept by the *mākaha* (sluice gate) of which he had charge, and it was the *kia'i loko* (keeper of the pond) custom to build small *hale kia'i* from which to guard the fish from being stolen or from being killed by pigs and dogs [Kamakau 1976:48].

Robert Dampier's c. 1825 wash drawing "Fishponds of Honoruru, Oahu" (Figure 19) documents a rather idyllic collection of grass huts scattered along the lower portions of Nu'uaniu Stream and along Honolulu Harbor. The fishponds depicted in the center foreground of the painting are in the right geographical position to be Kawa and Kūwili I fishponds. In 1828, the fishponds were described by a Dutch merchant:

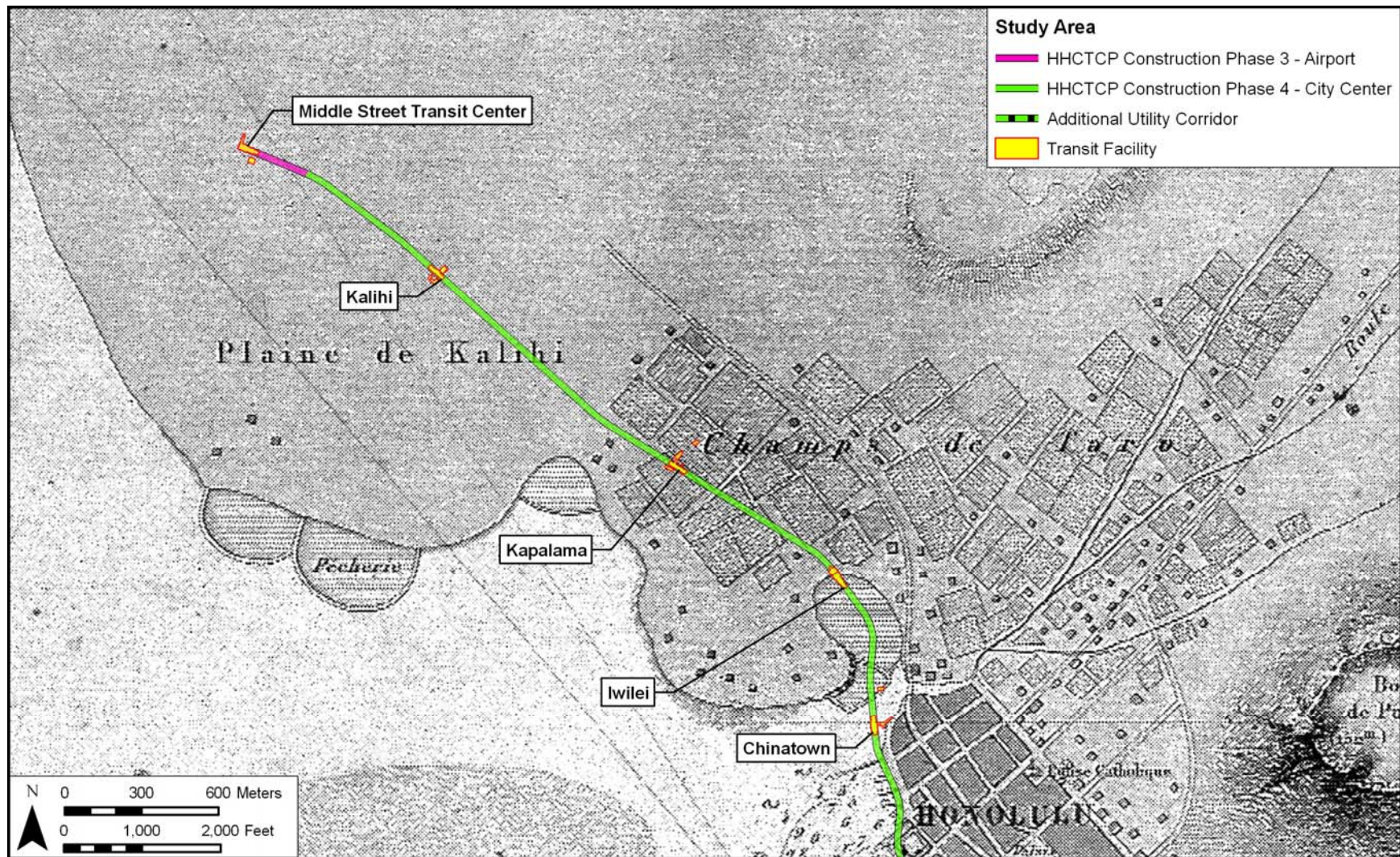


Figure 18. 1855 Map of Honolulu by Lt. Joseph de LaPasse of the French vessel, *L'Eurydice* (map reprinted in Fitzpatrick 1986:82-83), showing *lo'i*, habitations, and fishponds in the vicinity of the northwestern portion of the study area

. . .we arrived at the beach and came upon a small hamlet of several scattered fishermen's huts. The whole arrangement of the place seemed pleasant and cozy.

Now we had to wade through the water and our horses along the banks of the fish ponds of the king of these islands, situated north of the port of Honoruru. These ponds are irregularly shaped basins enclosed by walls of stone from the coral banks. These walls have openings through which the fish can enter the pond, but not, I was assured, leave it again to seek their freedom in the sea. When we approached this part of our trip, it happened to be at low tide so it was very easy to step through the water with the horse [Broeze 1988:69].

Kamehameha I, after the devastations to the population caused by the wars of conquest and a circa 1804 epidemic, encouraged people to replant the land and set aside several large tracts, including tracts in Kapālama, to grow crops for their own use and for trade with visiting ships. The Hawaiian historian, Samuel Kamakau, noted the following:

After the pestilence had subsided the chiefs again took up farming, and Kamehameha cultivated land at Waikiki, Honolulu, and Kapalama, and fed the people [Kamakau 1992:190].

Another early Hawaiian historian, John Papa ʻĪʻĪ, knew personally that:

He [Kamehameha] also lived in Honolulu, where his farms at Kapālama, Keoneula, and other places became famous. These tasks Kamehameha tended to personally, and he participated in all the projects [ʻĪʻĪ 1959:69].

Rev. Hiram Bingham, arriving in Honolulu in 1820, described a predominantly native Hawaiian environment—still a “village”—on the brink of western-induced transformation:

We can anchor in the roadstead abreast of Honolulu village, on the south side of the island, about 17 miles from the eastern extremity. . . . Passing through the irregular village of some thousands of inhabitants, whose grass thatched habitations were mostly small and mean, while some were more spacious, we walked about a mile northwardly to the opening of the valley of Pauoa, then turning south-easterly, ascending to the top of Punchbowl Hill, an extinguished crater, whose base bounds the north-east part of the village or town . . .

Below us, on the south and west, spread the plain of Honolulu, having its fish-ponds and salt making pools along the sea-shore, the village and fort between us and the harbor, and the valley stretching a few miles north into the interior, which presented its scattered habitations and numerous beds of kalo (*arum esculentum*) in its various stages of growth, with its large green leaves, beautifully embossed on the silvery water, in which it flourishes [Bingham 1981:92-93].

3.2.2 Mid-1800s and the Māhele

In the 1790s, after Kamehameha had conquered Oʻahu, Kapālama is specifically mentioned, along with Nuʻuanu, Mānoa, and Waikīkī, as having been “farmed” by Kamehameha. The desirability of Kapālama Ahupuaʻa is evidenced in that Kamehameha “kept of himself” the *ahupuaʻa* during the post-1795 division of Oʻahu lands (Kameʻeleihiwa 1992:59). Kapālama



Figure 19. 1825 pencil sketch “View of Saltwater Fish Ponds near Honoruru, Sandwich Islands,” by Robert Dampier, artist on the HMS *Blonde*; fishponds in foreground are probably Kawa and Kūwili I ponds (original at Bernice P. Bishop Museum; reprinted in Forbes 1992:76)

remained with the Kamehameha Dynasty through his grandchildren Moses Kekūāiwa, Victoria Kamāmalu, and Lot Kamehameha, eventually becoming part of the Bernice Pauahi Bishop Estate.

At the mid-19th century Māhele, the *ahupua'a* of Kapālama, along with many other lands in the islands, was awarded as part of LCA 7714-B to Moses Kekūāiwa, son of Kekūānao'a and Kīna'u, the later who had earlier been married to Kamehameha I. The land passed down in turn to his sister Victoria Kamāmalu, to her brother Lot Kamehameha, to his half-sister Ruth Ke'elikōlani, and then to her first cousin, Bernice Pauahi Bishop. The will of Mrs. Bishop set many of her lands aside as a trust to provide financial aid to educational and charitable institutions, including the founding of Kamehameha Schools to educate Hawaiian youth (Mitchell 1993:9).

Of note is the documentation for LCA 1723B:1, located just *mauka* of the study area, which mentions the presence of two brick tombs (see Appendix C 1723B). It appears most likely the tombs were in the larger, most *mauka* of John Neddles two parcels (that named "Pulehu") that is not contiguous with Dillingham Boulevard and the project corridor.

Also of note is the documentation for LCA 3142, located just *makai* of the study area, which mentions the presence of a sand dune (a potential location for human burials).

Subsequent to the Māhele award for the bulk of the *ahupua'a*, individual *kuleana* (commoner) lots were awarded pursuant to the 1850s Kuleana Act. The first detailed map of Kapālama, made by J. F. Brown in 1885, shows a traditional Hawaiian landscape of small *kuleana* LCA parcels extending across the Kapālama plain (Figure 20 and Figure 21). This area was clearly intensively used for both permanent habitation and agriculture. Mid-19th century Māhele documents identify these *kuleana* parcels as comprising house sites and irrigated taro fields. The map also indicates large areas set aside for rice fields near the central *'auwai* in land managed by the *konohiki* (land agent for the *ali'i*; in this case Moses Kekūāiwa).

The LCA testimony for Kapālama in the vicinity of the project area (see Table 3 and Appendix C) indicates that there was intensive cultivation of taro in the area, maintenance of fishponds, habitation, and some indication of the use of the *kula* (pasture or waste land). The *kuleana* to Hawaiian *maka'āinana* were located on the floodplain to the east of Waiakamilo/Houghtailing Street and included house and *lo'i* (pond fields) for the cultivation of *kalo* (taro). Roughly 100 *kuleana* lots were awarded in Kapālama. The claimants were generally awarded one to six separate *'āpana* (lots), sometimes contiguous or in the same *'ili*, but also sometimes scattered through several *'ili*. LCA documentation notes the presence of house sites, irrigated taro fields (*lo'i*), and aquaculture via fishponds in the immediate vicinity. The pattern of land-award distribution shown in the LCAs infers that the traditional Hawaiian practice of maintaining residences dispersed within and throughout their agricultural fields continued in Kapālama at least until the mid-nineteenth century.

One interesting *'ili* name listed in the LCAs is "Pelekane," meaning "British" or "Britannia," which is located along the entire *makai* boundary of the *ahupua'a* and mentioned in LCA 1222, located immediately *mauka* of the study area. Pukui et al. (1974:183) say that Pelekane was the nickname of Captain James Isaac Dowsett, who was a playmate of Kamehameha III, Kamehameha IV, and Lunalilo. He was the son of Samuel Dowsett, an English sea captain who came to the islands in 1822, when he helped deliver the vessel *King Regent* to Kamehameha I,

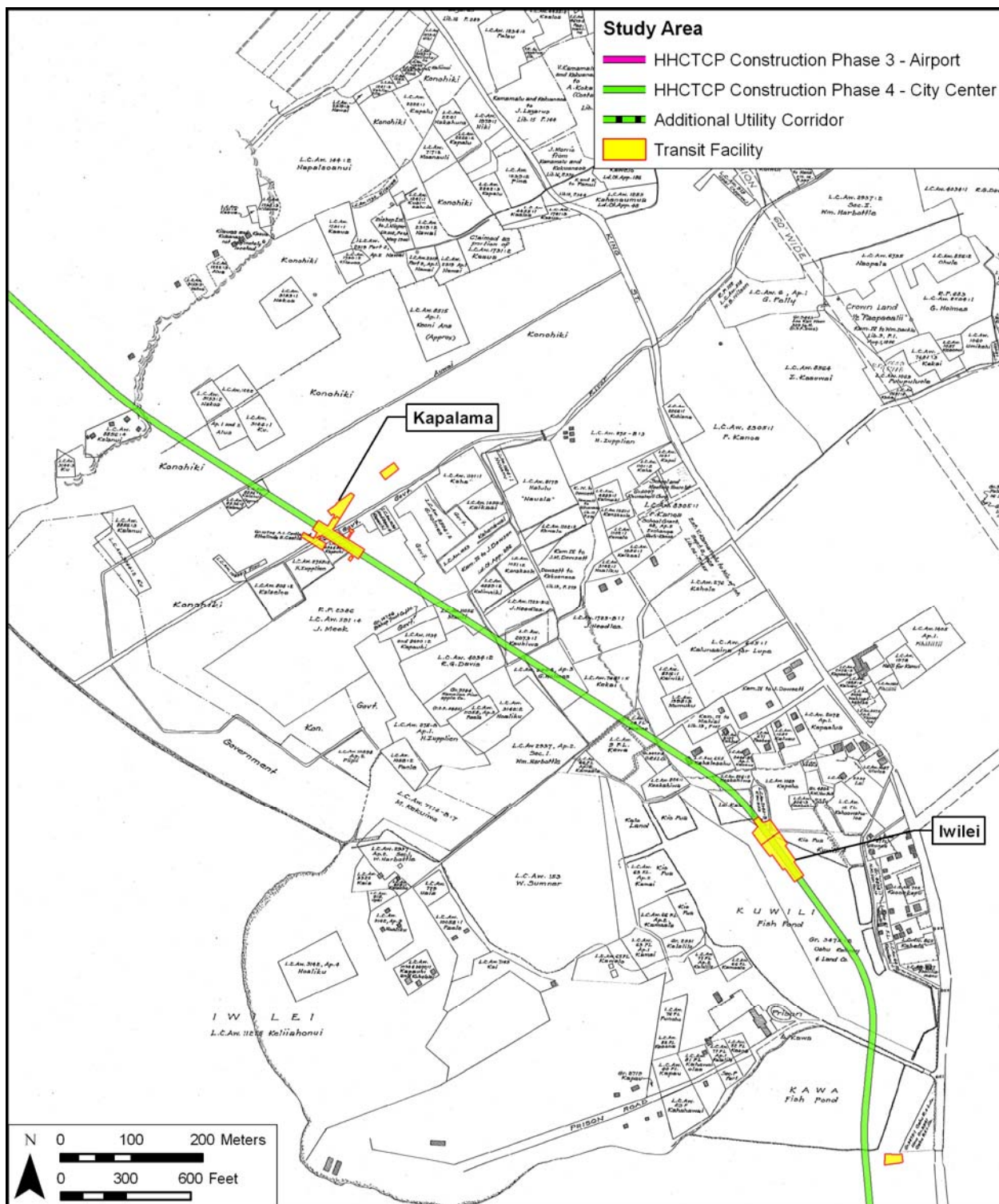


Figure 20. 1885 map of Kapālama by J.F. Brown, showing a traditional Hawaiian landscape of small *kuleana* LCA parcels extending across the Kapālama plain (Note: much of the Iwilei Station is located in the former Kūwili Fishpond)

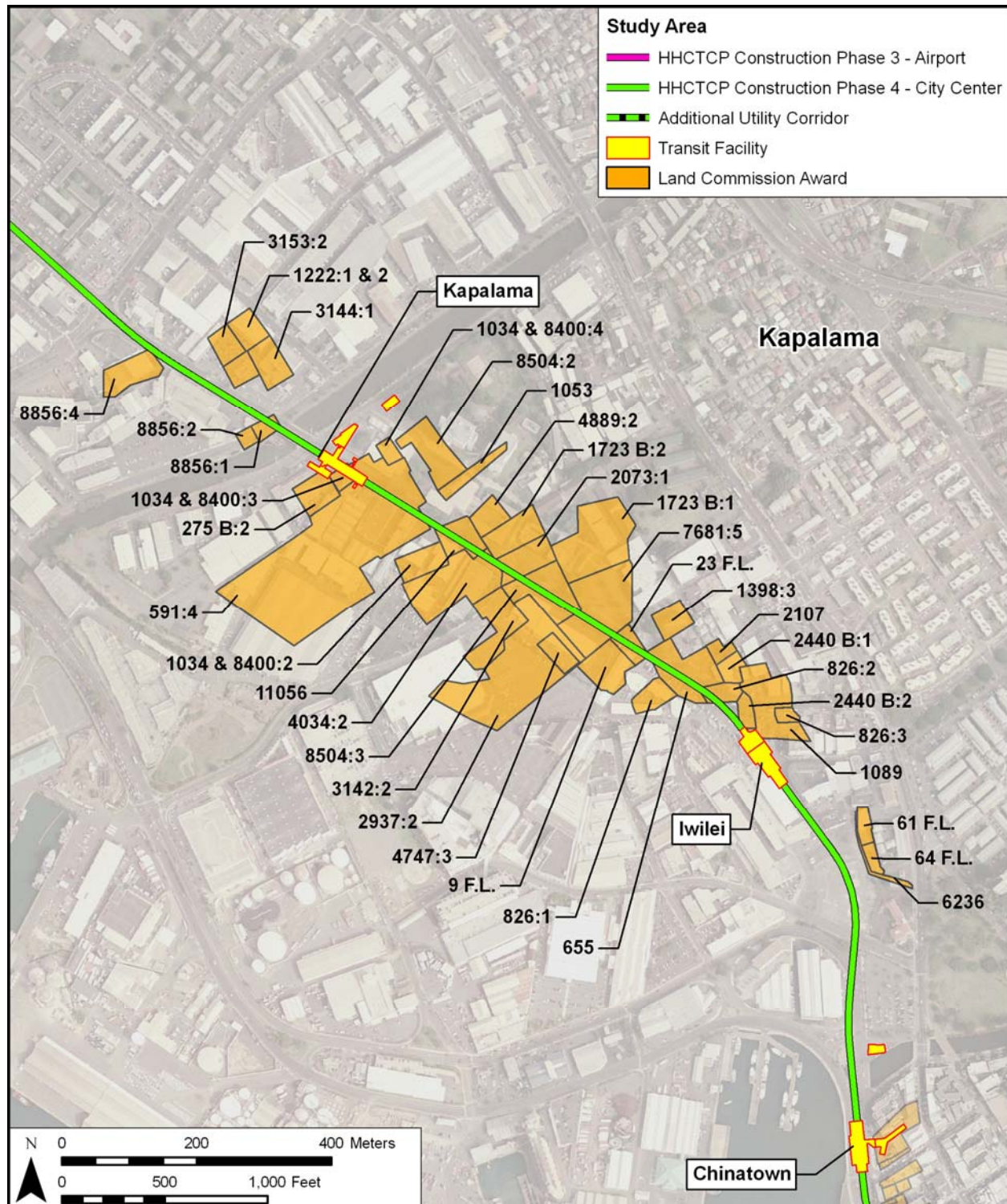


Figure 21. Aerial photograph (source: U.S. Geological Survey Orthoimagery 2005), showing the locations of Land Commission Awards (LCAs) in Kapālama near the study area

which had been promised to the king by George Vancouver. As an adult, James Dowsett ran a fleet of whaling vessels based in Hawai‘i and also became involved in the lumber, steamer, and ranch businesses, eventually owning the large ‘Ulupalakua Ranch on Maui (Day 1984:37). While Dowsett was not listed as a claimant in the LCA testimony, the Pelekane ‘ili name may instead have been used to note that there were early residents of English/Scottish descent in Kapālama. These include William Harbottle, awarded LCA 2937, and George Pelly, awarded LCA 6. William Harbottle was the son of John Harbottle, a Scottish sea captain who came to Hawai‘i in 1794, married the Hawaiian chiefess Papapaupu, fathered 15 children, and worked as a Honolulu harbor pilot. T. George Pelly was a cousin to the British governor of Canada and an early agent for the Hudson Bay Company, based in Hawai‘i at Honolulu Harbor.

3.2.3 Nineteenth Century

An 1881 map of O‘ahu (Figure 22) by the Hawaiian Government Survey shows the entire Kapālama Ahupua‘a. Only one road is mapped, the main road parallel to the coast that will become King Street. The only prominent structures noted are the O‘ahu Prison (Figure 23) built in Iwilei and the Insane Asylum on the eastern boundary of Kapālama.

3.2.3.1 The O‘ahu Prison

The O‘ahu Prison (previously located just south of the proposed Iwilei Station) was completed in 1857. It was built on a small island off the Iwilei mainland. Because the prison was built from cut coral blocks, it became known as “The Reef.” The central building was a dwelling for the overseer and guards and was flanked by two, two-story wings housing 32 cells in each wing. Also constructed was a new road between Kūwili I and Kawa fishponds that connected the prison to North King Street. The new road, a causeway between the two fishponds, is first identified on other contemporary maps as simply “Prison Road.” However, by the end of the 19th century, maps identified it as Iwilei Street. Mark Twain (1966:71-72) visited the prison in 1866 and wrote:

. . .we presently arrived at a massive coral edifice which I took for a fortress at first, but found out directly that it was the government prison. A soldier at the great gate admitted us without further authority than my countenance, and I supposed he thought he was paying me a handsome compliment when he did so; and so did I until I reflected that the place was a penitentiary.

3.2.4 Twentieth Century Development (Kalihi and Kapālama)

In the 20th century, the coastal and central sections of Kalihi and Kapālama became a suburb of Honolulu. The lower areas were often grouped together as Kalihi-Kapālama or Kalihi-Pālama. Thus the 20th-century developments of these two *ahupua‘a* will be discussed together. Historic maps document the traditional Hawaiian landscape of Kalihi-Kapālama and the development of the study area road corridors in the 20th century.

An 1897 map of Honolulu by M. D. Monsarrat (see Figure 16) shows that King Street is the main east-west thoroughfare through the area, paralleled by the tracks of the Oahu Railway and Land Company railroad, both located *mauka* of the current study area. The fishponds on the Kalihi Coast are still in use, but the area inland has been converted from taro fields to rice fields.



Figure 22. 1881 map of O'ahu by the Hawaiian Government Survey (Note: much of the vicinity of the Chinatown Station was still offshore in 1881)

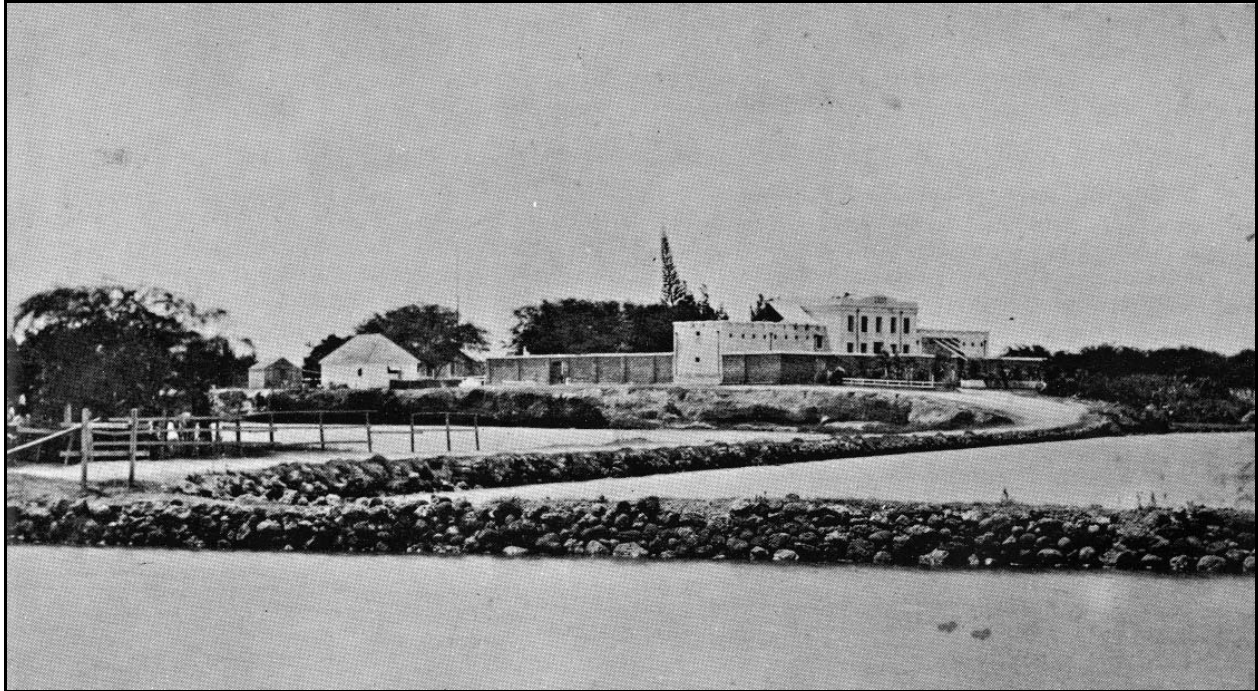


Figure 23. 1866 (ca.) photograph of O'ahu Prison (Bishop Museum photograph; reprinted in Scott 1968:855)

Table 3. LCAs in Kāpalama in the Vicinity of the Study Area (in numeric order)

LCA Number	Contents of Award
9 FL	[East of Kapālama Canal] Fort Lands, 2 <i>lo'i</i> to Kewa
23 FL	[East of Kapālama Canal] Fort Lands, 1 house lot (1 house), 5 <i>lo'i</i> , and 1 hog sty to Moeino
61 FL	[East of Kapālama Canal] 1 house lot
64 FL	[East of Kapālama Canal] Fort Lands, 1 house lot, and 1 <i>lo'i</i> to Kapulani
275 B	[East of Kapālama Canal] 19 or more taro patches at Poe Poe belonging to Henry Zupplein
591	[East of Kapālama Canal] (9.58 acre) lot to John Meek
655	[East of Kapālama Canal] 1 house lot (3 houses) to John Kahaleaahu
826	[East of Kapālama Canal] 2 <i>lo'i</i> to Keakahiwa
1034 and 8400:2, 8400:3, and 8400:4	[East of Kapālama Canal] 3 <i>lo'i</i> to Kuhelelei
1053	[East of Kapālama Canal] 3 <i>lo'i</i> and an <i>'auwai</i> at Nauala to Kanahenawai
1089	[East of Kapālama Canal] 1 house lot (1 house) and 8 taro patches (<i>lo'i</i>) at Kealia to Kapehe

LCA Number	Contents of Award
1222	[West of Kapālāma Canal] 1 house lot, 5 <i>lo'i</i> , and 2 coconut trees. Pelekane ' <i>ili</i> . Awarded to Alua. Also notes the presence of an ' <i>auwai</i> and stream
1398	[East of Kapālāma Canal] 3 <i>lo'i</i> and 2 ' <i>auwai</i> to Mumuku
1723 B:1 and 1723 B:2	[East of Kapālāma Canal] 1 house lot (2 houses, 2 tombs), 3 <i>lo'i</i> to John Neddles
2073	[East of Kapālāma Canal] 5½ <i>lo'i</i> to Kauhiwa
2107	[East of Kapālāma Canal] 1 house lot (1 house) and 8 <i>lo'i</i> to Kahina
2440 B:1 and 2440 B:2	[East of Kapālāma Canal] 2 house lots (one house on each), 1 <i>lo'i</i> , and 1 sand pond to Kauaua
2937	[East of Kapālāma Canal] 1 pasture (<i>kula</i> land) with taro to William Harbottle
3142	[East of Kapālāma Canal] 1 house lot, 2 <i>lo'i</i> , and 1 sand dune to Hooliku
3144	[West of Kapālāma Canal] 1 house lot and 2 <i>lo'i</i> . Awarded to Noah. Also notes the presence of a fishpond
3153	[West of Kapālāma Canal] 1 house lot and 3 <i>lo'i</i> . Kahope ' <i>ili</i> . Awarded to Nakoa. Also notes the presence of an ' <i>auwai</i> and stream
4034	[East of Kapālāma Canal] 1 <i>lo'i</i> to Robert G. Davis
4747	[East of Kapālāma Canal] 1 house lot (2 houses), 5 <i>lo'i</i> to Kama
4889	[East of Kapālāma Canal] 1 house lot, 4 <i>lo'i</i> to Kalimaiki
6236	[East of Kapālāma Canal] 6 house lots to Kaaiawaawa
7681	[East of Kapālāma Canal] ½ of Kaukahoku <i>ili</i> (4 acres) to Kekai
8504	[East of Kapālāma Canal] 11 <i>lo'i</i> , 1 fish pond to George Holmes
8856	[West of Kapālāma Canal] 1 house lot and 3 <i>lo'i</i> . Awarded to Kalanui
1053	3 <i>lo'i</i> to Kahenawai
11056	[East of Kapālāma Canal] 4 <i>lo'i</i> at Kaukahoku to Maui

Specific to the Kalihi-Kapālāma portion of the study area is that a majority of the area is still unurbanized. Most of this area is shown to be cultivated with either rice or pineapple. Of note is that both the proposed Middle Street and Kapālāma Station locations are bisected by streams, Kalihi Stream and Niuhelewai Stream, respectively. Niuhelewai Stream is of particular interest as it is mentioned as the site where the Maui Chief Kahekili defeated Kahahana of O'ahu (Alexander 1891: 123). Niuhelewai Stream is noted as being "choked up with the corpses of the slain" (Alexander 1891: 123).

The 1919 War Department topographic map, Honolulu Quadrangle, shows major development within the Kalihi-Kapālama area (Figure 24). An extensive grid of roads and structures is now present throughout the Kalihi-Kapālama portion of the study area with just a small portion between the Kalihi and Kapālama Stations remaining un-urbanized. Also of note is the addition of a new section of O‘ahu Railway and Land Company railroad track located primarily *makai* of the Kalihi-Kapālama portion of the study area, but shown crossing the study area at the southeastern edge of the proposed Middle Street Station location.

The 1919 War Department also shows a large square structure labeled as a “jail” located *makai* of the study area between the Middle Street and Kalihi Station locations. This represents the new location of the O‘ahu Prison originally located in Iwilei and then relocated in Kalihi and renamed O‘ahu Jail between 1916 and 1918 (Figure 24 and Figure 25). This area is now occupied by the O‘ahu Community Correctional Facility. A visitor in 1921 was impressed with its “library with more than 1,000 books, a cheery visitors' room and well-kept cells and dormitories. . . . Indeed, one of the most vivid impressions one gets is that of brightness, airiness and spotless cleanliness: how different from the noisome, dank penal institutions of a generation or so back” (Bolante 1921).

The 1927-28 U.S. Geological Survey topographic map, Honolulu Quadrangle, shows an expansion of the grid of streets that first appeared in the 1919 War Department map (Figure 26). The amount of structures located along the grid of streets has intensified. Also of note is that the present road alignment known as Dillingham Boulevard is now shown to be completely constructed. This roadway accounts for approximately half of the current study area.

The 1943 War Department topographic map (Figure 27), Honolulu Quadrangle, shows little change in the Kalihi-Kapālama area from what was shown on the 1927-28 U.S. Geological Survey topographic map. However, by the 1950s, all of the Kalihi-Kapālama area fishponds have been filled in, associated with intensive urban/industrial expansion into the coastal portions of the area (Figure 28). This trend appears to continue into the 1970s as a 1978 U.S. Geological Survey orthophoto shows urban/industrial development up to the edge of the existing coastline with streets and structures covering virtually the entire Kalihi-Kapālama area (Figure 29).

3.3 Honolulu

3.3.1 Early Post-Contact

A major factor for the delay in the development of Honolulu as a major population center and port was the relatively late discovery of Honolulu Harbor, attributed to Captain William Brown in early 1793. Additionally, foreigners were wary of landing at O‘ahu due to the fear of attack and the difficulty of getting water and food, particularly yams (Portlock 1968).

Another factor deterring foreigners from O‘ahu was the island’s political instability. The ruling chief Peleiōhōlani died around 1780, and his heir, Kumuhana, was almost immediately deposed in a *coup d’etat*. A period of political unrest followed that included the successful invasion by Kahekili of Maui in 1783, the bloody crushing of the O‘ahu rebellion in 1786, the invasion by the Kaua‘i ruler, Ka‘eokūlani in 1791, the passing of the rule following Kahekili’s death in 1794 to Kalanikūpule, and finally, his defeat by Kamehameha I in 1795 (Alexander

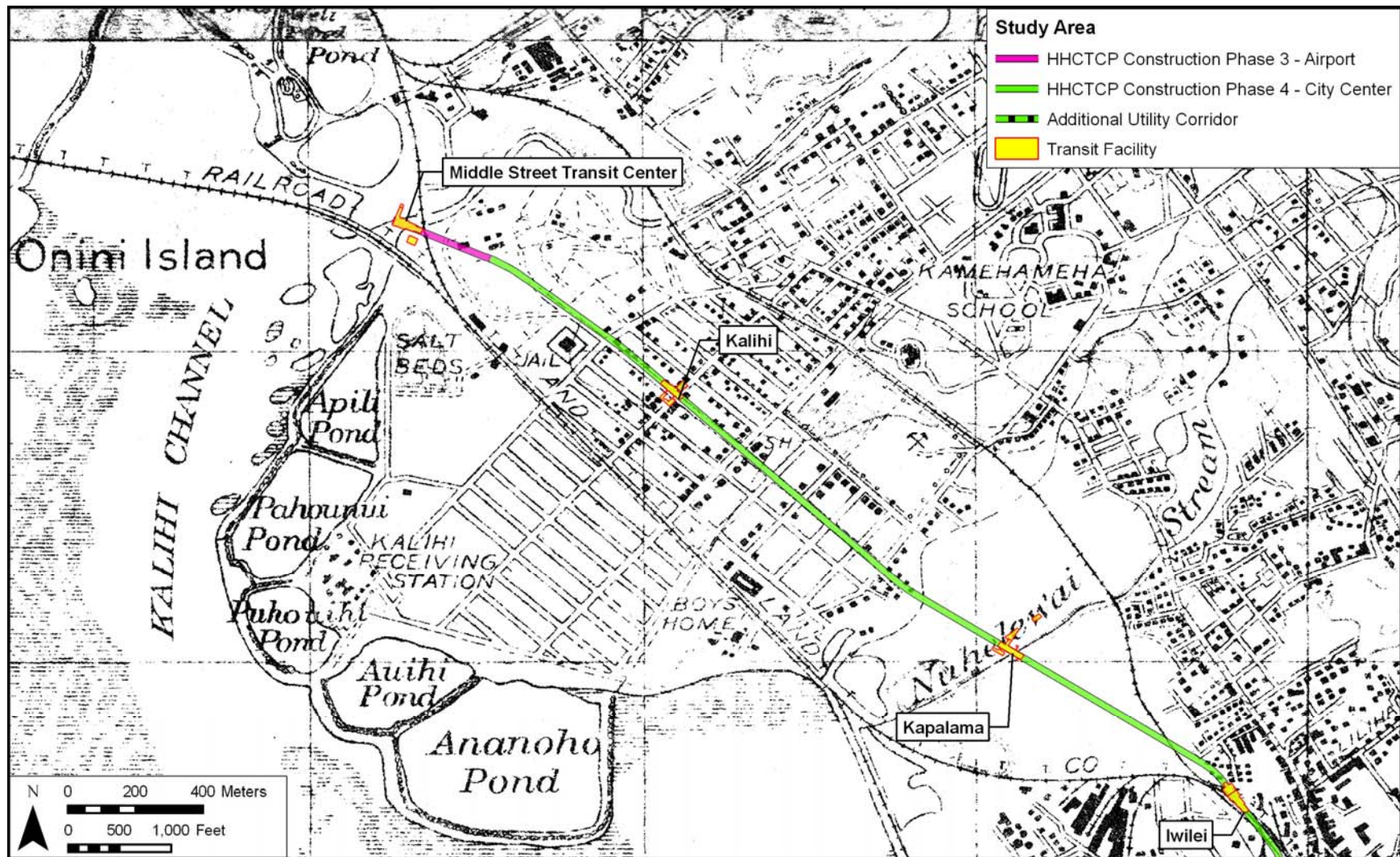


Figure 24. 1919 War Department topographic map, Honolulu Quadrangle, showing the Kalihi-Kapālama portion of the study area

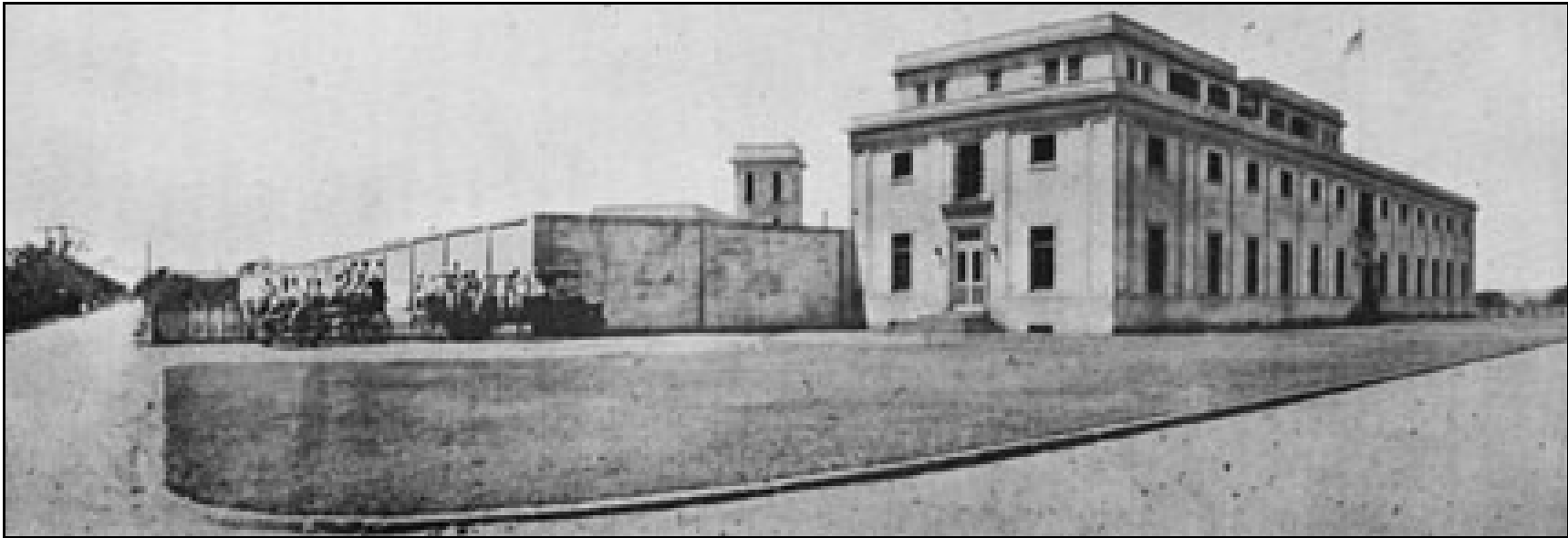


Figure 25. O'ahu Jail at Kalihi ca. 1921 (photo from *Honolulu Magazine* May 1921)

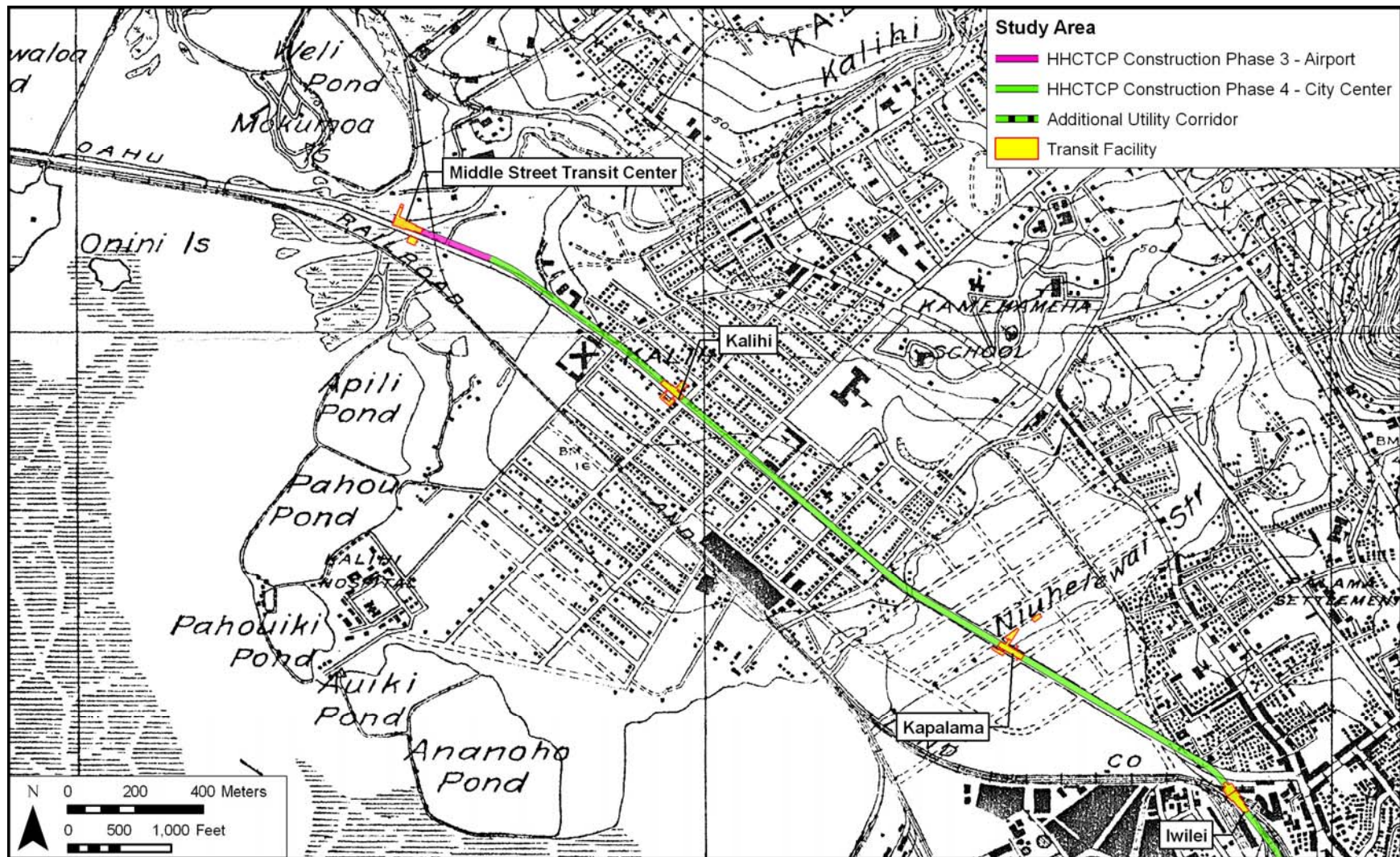


Figure 26. 1927-28 U.S. Geological Survey topographic map, Honolulu Quadrangle, showing the Kalihi-Kapālama portion of the study area

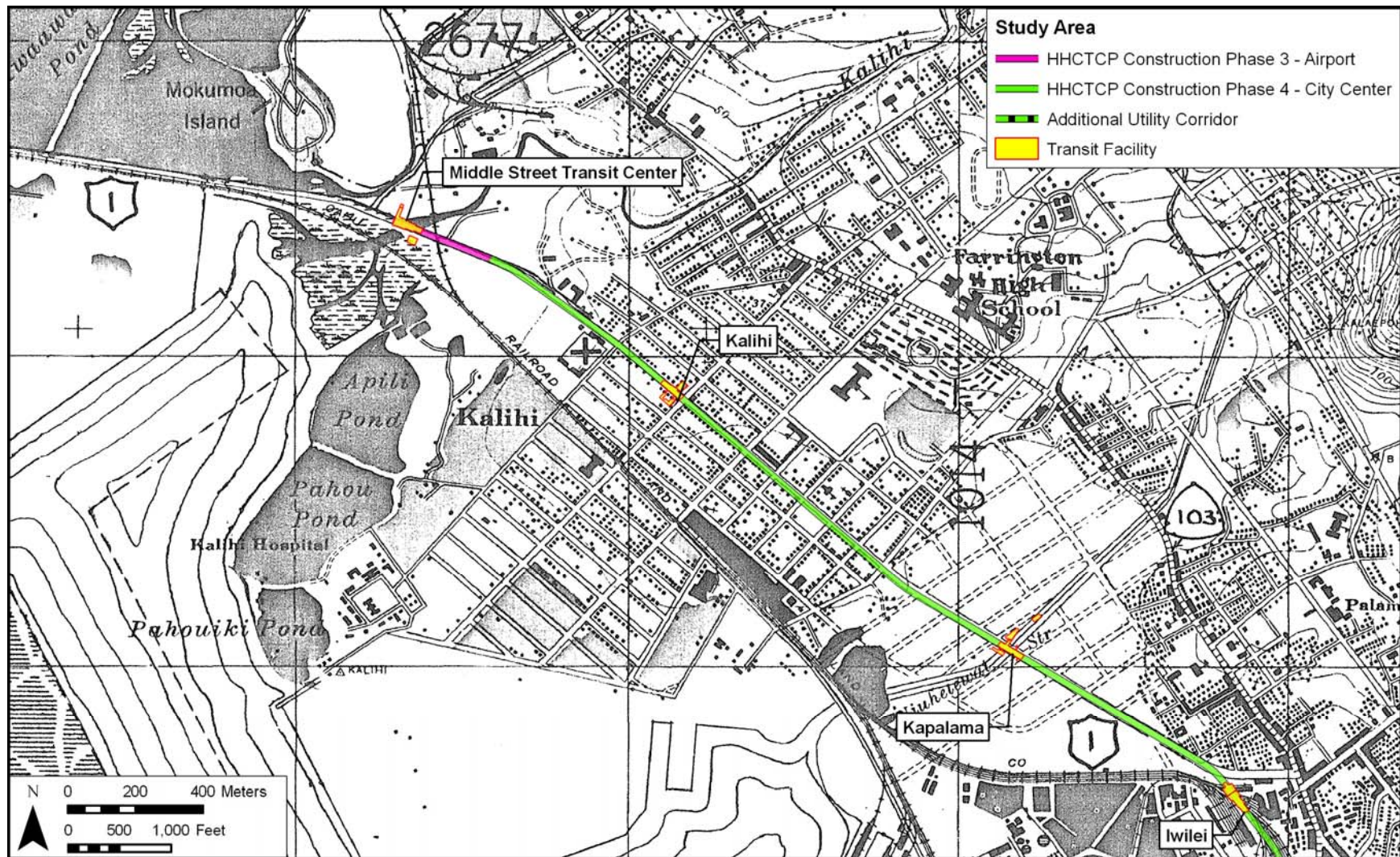


Figure 27. 1943 War Department topographic map, Honolulu Quadrangle, showing the Kalihi-Kapālama portion of the study area

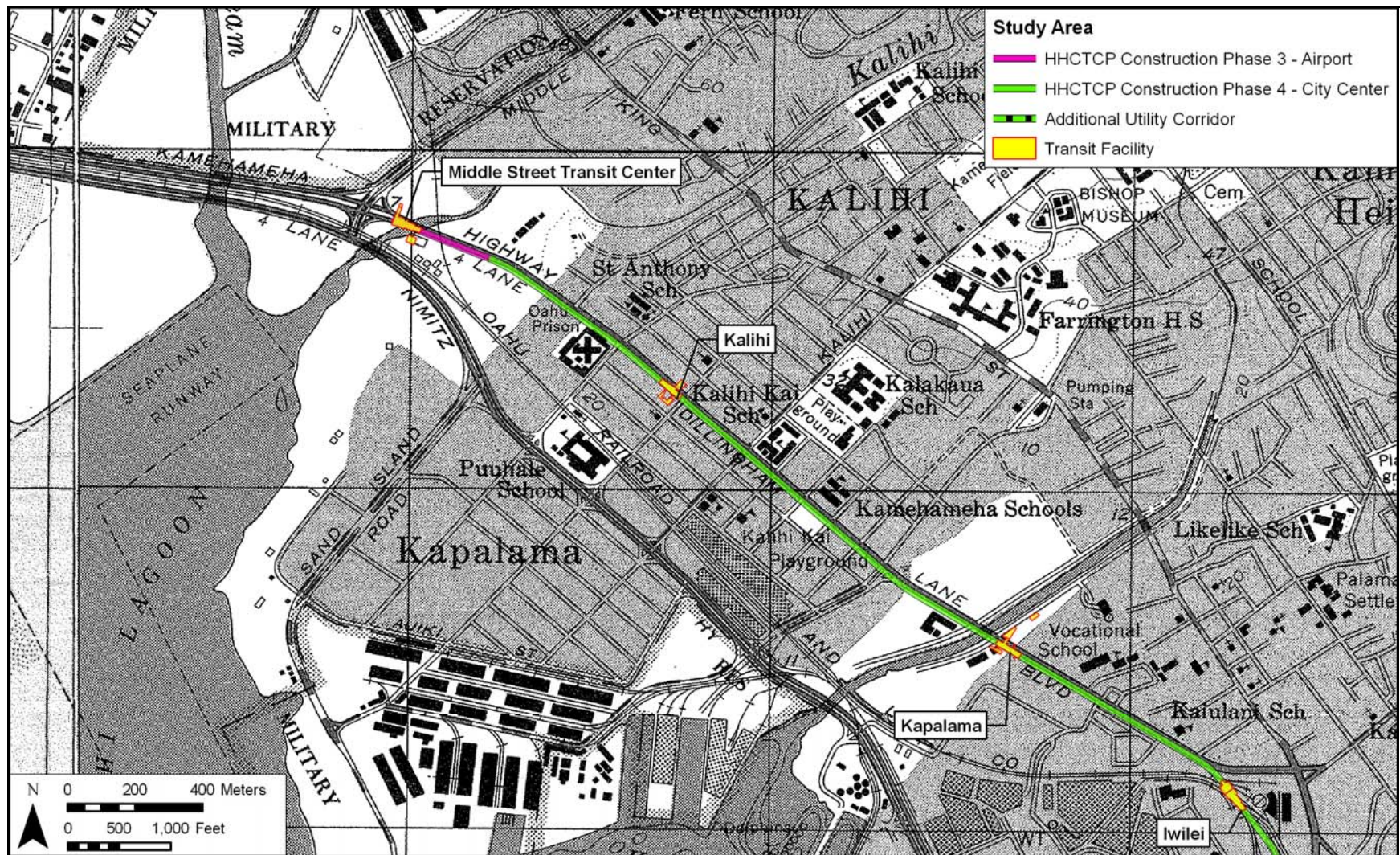


Figure 28. 1953 Army Map Service topographic map, Honolulu Quadrangle, showing the Kalihi-Kapālama portion of the study area

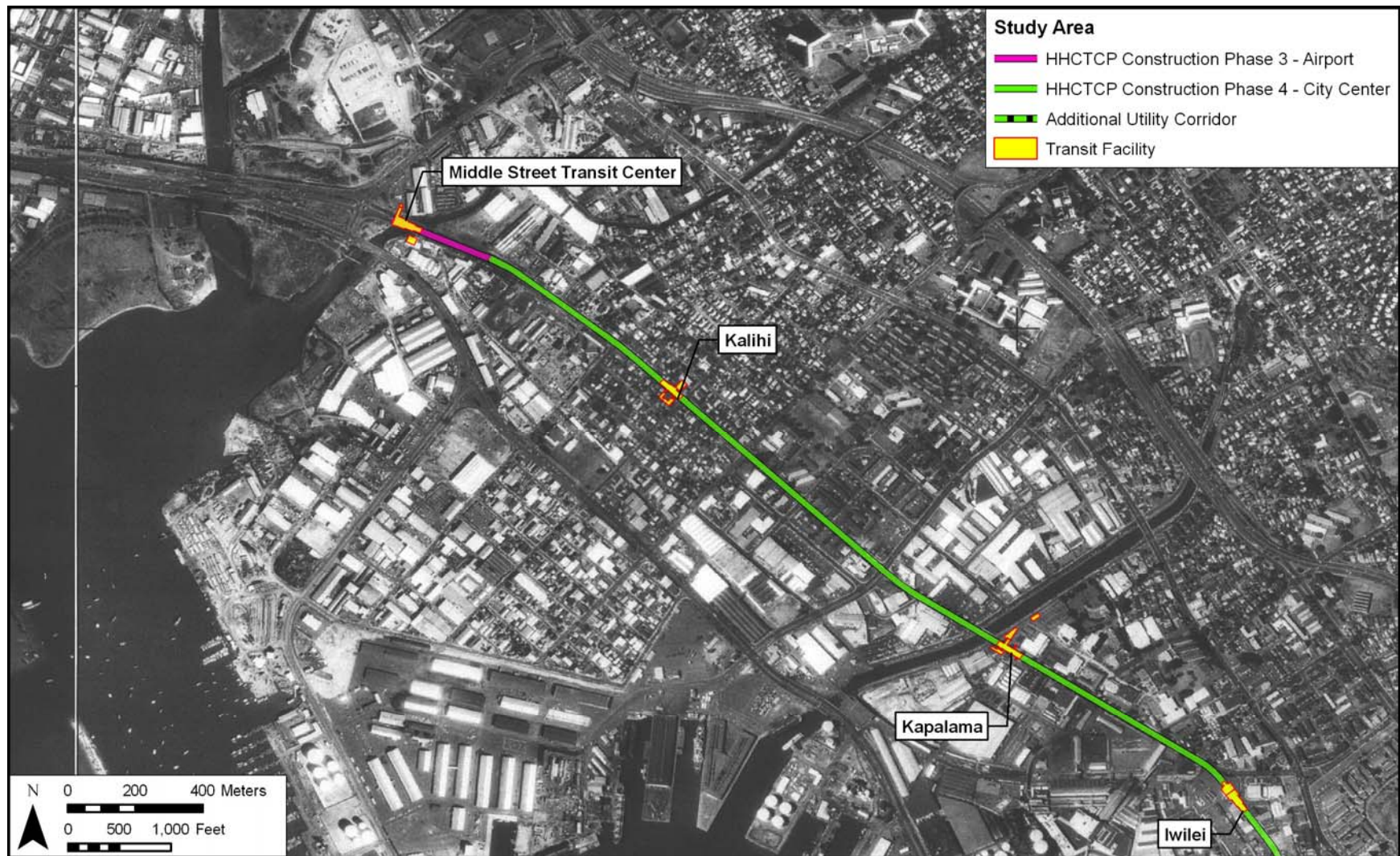


Figure 29. 1978 U.S. Geological Survey Orthophoto of Honolulu showing the Kalihi-Kapālama portion of the study area

1891). These events all contributed to the island's instability and delayed the development of Honolulu as a major port. Honolulu's prominence had to await the peace established by Kamehameha I and his encouragement of trade there. Kamehameha defeated Kalanikūpule at the battle of Nuʻuanu in 1795, and in 1809, moved his court, government, and residence from Waikīkī to Honolulu.

Kamehameha I was known to have taken a special interest in farming and would work in the fields alongside the *makaʻāinana* to demonstrate the importance of agriculture. Crops such as yams were developed under Kamehameha and were often sold to the captains of foreign ships in need of provisions at Honolulu Harbor (Dockall 2003:43). John Papa ʻĪʻĪ recalls the fields of Kamehameha in Nuʻuanu, and refers to the places where Kamehameha farmed and resided as “show places” (ʻĪʻĪ 1959: 69).

Francisco de Paula Marin, a Spaniard who arrived in the Hawaiian Islands in 1793 or 1794 and had become a confidante of Kamehameha, recorded in his journal, “In the end of 1809 and beginning of 1810 I was employed building a stone house for the King” (Gast and Conrad 1973:200). This was the first stone structure in Honolulu, a town that, according to Marin, was:

...[by 1810] a village of several hundred native dwellings centered around the grass houses of Kamehameha on Pākākā Point near the foot of what is now Fort Street. Of the sixty white residents on Oahu, nearly all lived in the village, and many were in the service of the king [Gast and Conrad 1973:29].

It is unclear whether Kamehameha himself ever resided in the completed house, as in 1810 he returned to Hawaiʻi island where he lived the remainder of his life, traveling intermittently back to Oʻahu. Building in Honolulu, however, continued apace with Marin and other foreign residents building their own stone houses and buildings during the ensuing decade.

3.3.2 1800 to 1850: Honolulu in Transition

A visitor to Honolulu in 1819 notes the expanding western presence within the traditional Hawaiian landscape (Freycinet 1978:42) writes:

The port of Onorourou, generally frequented today by all the European vessels that come to the islands, is without doubt the most favorable location with respect to shelter, commerce, and resources for the supply of ships. The town of Onorourou is located on a large, flat plain. It is on the shores of a bay of the same name. The houses, similar to the most part to those of Owhyhi [Hawaiʻi] and of Mowi [Maui], are however interspersed with a certain number of houses built of stone that belong for the most part to Europeans or to Anglo-Americans.

According to John Papa ʻĪʻĪ (1959), at this time the chiefs were living along the beach of the harbor of Honolulu (Figure 30). In the same area, located at the end of Fort Street, a large fort was constructed. This fort served as a military post, as well as a government center, prison, and asylum. The first capital punishment was administered in the fort was on October 20, 1840, when chief Kamanawa was hanged for poisoning his wife, Kamokuiki (Judd 1975:50). The gallows were set up on the parapet just east of the main gate, and the execution was attended by some 10,000 viewers (Judd 1975:50). In reference to this fort ʻĪʻĪ (1959:145) writes:

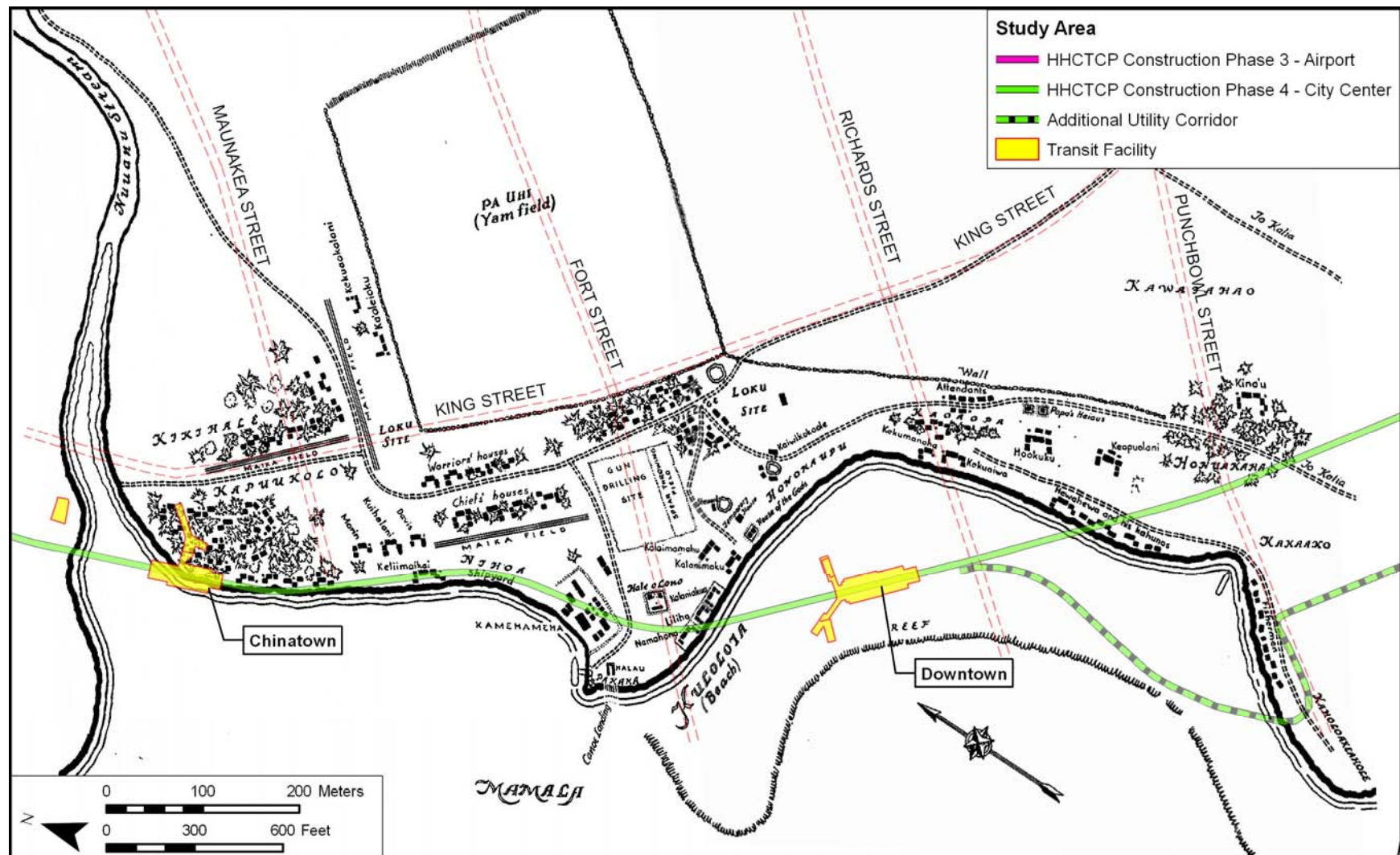


Figure 30. Adaptation of the Paul Rockwood drawing from the data compiled by Dorothy Barrere of the layout of early Honolulu (circa 1810) between Nu‘uanu Stream and Kaka‘ako to an overlay of the present city in the vicinity of the project alignment (from ‘I‘i 1959) (Note: the Rockwood reconstruction should be understood as schematic)

It was Boki's privilege to assign work, for he had been governor of the island of O'ahu from the time Kamehameha I ordered all the chiefs to O'ahu in 1816 to expel the Russians. It was then that the Fort was begun.

Judd's (1975) *Palaces and Forts of the Hawaiian Kingdom* describes the creation of Honolulu Fort:

The Russian Trading vessels "Ilmena" and Kadiak" arrived in Honolulu in the summer of 1816 with a complement of 80 to 90 men, and as was normal practice for the Russians (i.e., in Alaska), they began to build a blockhouse trading post near the entrance to the harbor and ran up the Russian flag. After a small contingent of Russians awoke one morning and found themselves surrounded by a large number of armed and hostile warriors, they left Honolulu and the island of O'ahu in a hurry. Once he had evicted the Russians, Kalaimoku began to build a fort to protect the harbor on the same location as the partially constructed [Russian] blockhouse. This fort was variously known to the Hawaiians as Kekuanohu (the Thorny Back, because of the bristling guns on the walls) or Kepapu (the Gun Wall). The location of Honolulu Fort was just *makai* of the present location of Fort St. Mall and Queen St. Fort St. at the time the fort was constructed was only a trail to the Pakaka canoe landing at the water's edge; in time it grew to a road known as Alanui Papu (street to the Gun Enclosure), and in more modern times received its present name. Queen St. was a path along the shore at the time of the fort's construction [Judd 1975:42].

The presence of the Protestant missionary church and residences (Kawaiaha'o Church and the Mission Houses) in the area now known as Kaka'ako, and the establishment of the royal court in Honolulu appear to have been major factors focusing the development of Honolulu east, away from Nu'uano Stream into an area that had been described as relatively little used in pre-contact times.

In 1820, the American Board of Commissioners for the "Foreign Missions Sandwich Islands" arrived in Hawai'i and quickly made Honolulu its headquarters. As a member of that mission, Reverend Hiram Bingham, writing in 1847, describes Honolulu as viewed from "Punchbowl Hill" in 1820 (Bingham 1981:92-93):

From the highest part of the rim we had a beautiful view of the village and valley of Honolulu, the harbor and the ocean, and of the principal mountains of the island...Below us, on the south and west, spread the plain of Honolulu, having its fishponds and salt making pools along the seashore, the village and fort between us and the harbor, and the valley stretching a few miles north into the interior, which presented its scattered habitations and numerous beds of *kalo* (*Arum esculentum*) in its various stages of growth, with its large green leaves, beautifully embossed on the silvery water, in which it flourishes...Through this valley, several streams descending from the mountains in the interior, wind their way, some six or seven miles, watering and overflowing by means of numerous artificial canals, the bottoms of kalo patches, and then, by one mouth, fall into the peaceful harbor.

In contrast to this idyllic evocation is Bingham's terse record of the land, today the site of the Mission Houses Museum and the Kawaiaha'o Church (250 m *mauka* of the project alignment), designated by the *ali'i* for the missionaries' use in 1820:

Boki [governor of O'ahu] at length, by the order of the king, gave the mission a building spot for the Honolulu station, on the arid plain, about a half a mile east of the landing, then some distance from the village, but now [1847] included in it [Bingham 1981:112].

Bingham's characterization of the Honolulu mission site is seconded by another early missionary, C. S. Stewart, who, arriving in Lahaina on Maui, proclaimed it "so refreshing an asylum [after] four weeks' residence on the dreary plain of Honoruru" (Stewart 1970:177).

Another visitor to Honolulu in the 1820s, Jacobus Boelen (1988:62), hints at the possible pre-Contact character of the Honolulu lands:

It would be difficult to say much about Honoruru. On its southern side is the harbor or the basin of that name... The landlocked side in the northwest consists mostly of taro fields. More to the north there are some sugar plantations and a sugar mill, worked by a team of mules. From the north toward the east, where the beach forms the bight of Whytete [Waikīkī] the soil around the village is less fertile, or at least not as greatly cultivated.

In 1846, Honolulu was made the capitol of the Hawaiian Kingdom and was well on its way to becoming the commercial and political hub of the islands. By 1850 Honolulu was, as described by Charles Wilkes, "very conspicuous from the sea and has more the appearance of a civilized land, with its churches and spires, than any other island in Polynesia" (Wilkes 1844, in Fitzpatrick 1986:69). During this period there was an obvious increase in density of land use and urbanization

3.3.3 The Māhele

A review of historic maps of Honolulu indicate 19 LCAs in the vicinity of the study area (Figure 31 and Table 4; see also Appendix D). Historic maps and documents indicate that LCAs in the present Downtown Honolulu area were awarded to a variety of Native Hawaiians and foreign settlers who had moved into Honolulu as the city developed (see Appendix D). Most of the LCAs in the vicinity of the study area were small awards consisting of house lots, but there were also agricultural lands, commercial properties, and royal lands (see Figure 31 and Table 4).

On March 8, 1848, Kamehameha III divided his property in the islands of Hawai'i reserved for him through the Māhele into two parts: the smaller portion he retained for himself and his heirs, while the larger portion was given "...to his Chiefs and People," the latter became known as "Government Lands" (Chinen 1958: 26). Fifty-two 'ili in Honolulu, Kalihi, and Waikiki, were set aside from the Government Lands as "Fort Lands" for the support of the garrison of the Fort at Honolulu. A distinct series of LCAs was issued for the *kuleana* in these lands, marked F.L. (Fort Land), to distinguish them from other awards. The Fort Land *kuleana* were granted free of charge to the awardees. Four of these Fort Land awards were granted near this section of the study area. All four awards included either house lots or *lo'i* or included both.

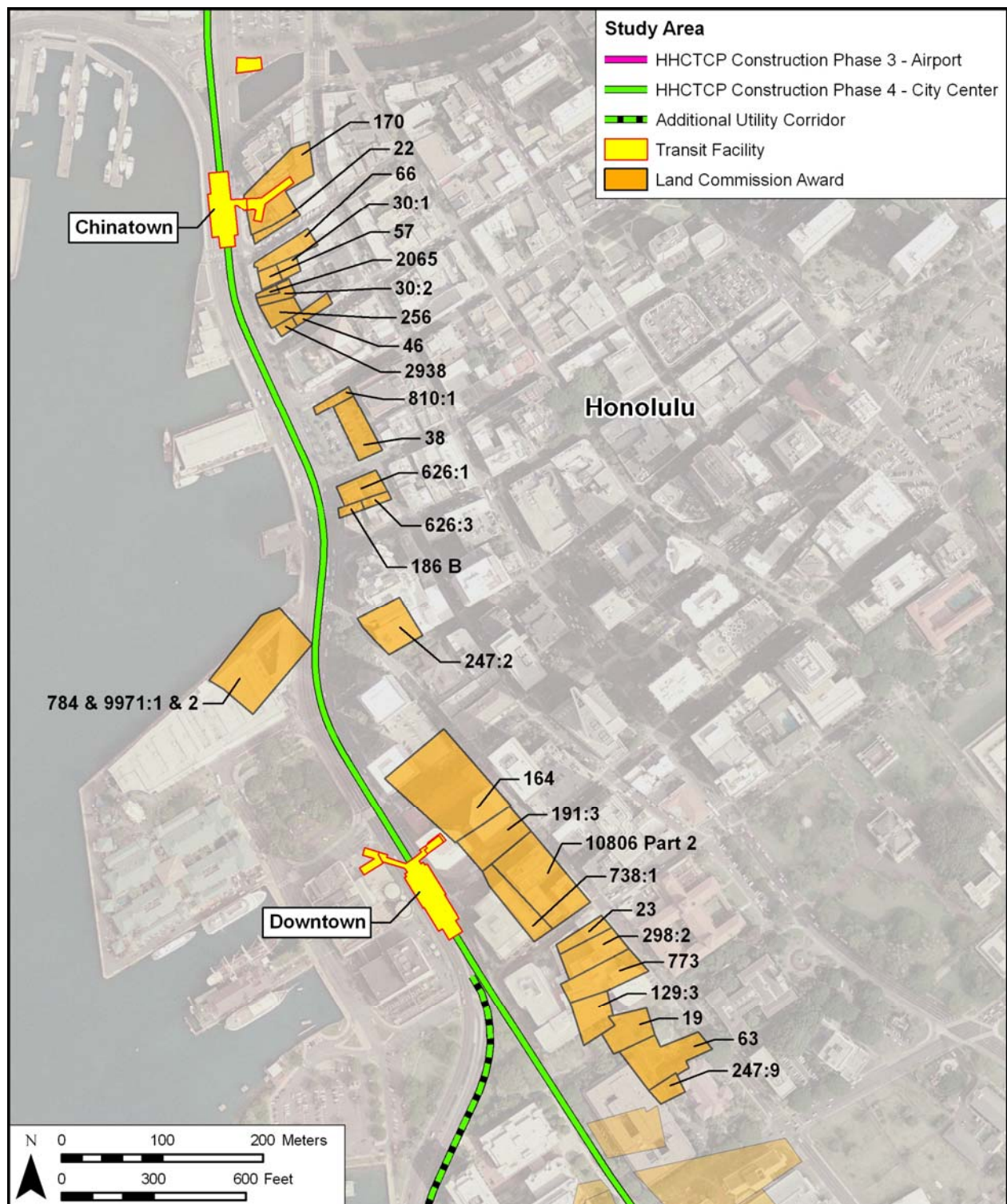


Figure 31. Aerial photograph (source: U.S. Geological Survey Orthoimagery 2005), showing the locations of LCAs within and in the immediate vicinity of the east Kapālama and Downtown Honolulu portion of the study area

Table 4. LCAs in Honolulu in the Vicinity of the Study Area (in numeric order)

LCA Number	Contents of Award
22	1 house lot
30	1 house lot (six houses) to Kaho'owaha
38	1 house lot (including wharf and dwelling) to Elias and Hiram Grimes
46	Former (Marin) cow yard, small yard, and house to Joseph Maughan for his wife, Cruz (Marin's daughter)
57	1 house lot to Simeona Kau
66	1 house lot
164	1 house lot to Mataio Kekūanao'a for Victoria Kamāmalu
170	1 house lot to Mataio Kekūanao'a
186 B	"Market House, this place is for M. Kekuanaoa. The claim for this place is that it was Keaumoku's own place, and on his death it went to Kaahumanu, and on her death, to Kinau, on her death to V. Kamamalu....a lot between the lot of John Mana and the Hotel. [Award 186B; R.P. 4872; Queen St. (Aienui) Honolulu Kona; 1 ap.; .06 Ac.; for V. Kamamalu]
191	1 house lot to Kekauonohi
247	1 of 12 house lots and store lots claimed for Wm. C. Lunalilo by C. Kanaina
256	1 house lot to Kalukini
626	(0.49-acre) lot at Nu'uanu and Merchant Streets, (0.06-acre) lot on Merchant Street to Stephen Reynolds (who was awarded 17 lots in the Downtown area)
738	1 house lot to Kaunuohua
784	The wharf commonly called the point and granted to James Robinson and William Pitt by Karaimoku
810	2 house lots to Francis C. Jones, Rosalie Jones, and John Jones (heirs to Lahilahi, daughter of Francisco Marin)
10806: Part 2	1 house lot to Kamehameha III
2065	1 house lot to Keo Bolabola for Kawai'i
2938	1 vineyard (planted by Francisco Marin) to Juan Marin (grandson of Marin)

3.3.4 1850-1900s

By 1850 Honolulu was, as described by Charles Wilkes, “very conspicuous from the sea and has more the appearance of a civilized land, with its churches and spires, than any other island in Polynesia” (Wilkes 1844, in Fitzpatrick 1986:69). An 1855 map by Lt. Joseph de LaPasse of the French vessel, *L'Eurydice*, shows urban development centered at Honolulu, the area currently known as Downtown Honolulu (Figure 32). The map also shows large portions of the study area to be either at the edge of the coastline or completely offshore.

The waterfront of Honolulu changed significantly during this period. Experiencing the peak of the whaling industry, around 1850, the harbor area became crowded with trading and whaling vessels, and required additional wharfs to accompany them.

3.3.4.1 Growth of Honolulu Harbor and Sand Island

The first harbor facilities were developed on the shore of “Honoruru” town in 1825 when the hulk of an old ship was sunk to create a small wharf (Alexander 1908). This wharf served the growing sandalwood trade and the subsequent whaling industry. Through the 1850s, the commercial development of Honolulu and its harbor facilities appears to have been concentrated above the southeast side of Nu‘uanu Stream, far removed from Kalihi Kai. In 1856, the outskirts of town in Iwilei became the site of a new prison along with a new road connecting it to what is now King Street.

Following the demolition of the fort in 1857 (Judd 1975:50), its walls became a 2,000-foot retaining wall used to extend the land out onto the shallow reef in the harbor; the remaining fort materials were used as fill to create what came to be known as the Esplanade (Judd 1975:50). Between 1857 and 1870, 22 acres of reef land between Fort Street and Alakea Street was filled in with material dredged from the harbor (Bush 1957:14).

A ca. 1880s photograph of Honolulu Harbor shows the Esplanade at the base of Fort Street (Figure 33). The dredging of Honolulu Harbor that would expand the Esplanade soon followed:

Major alteration of Honolulu from its natural configuration began in 1890 with the dredging of the main channel to 60 m (200 ft) width by 9 m (30 ft) deep for about 303 m (1000 ft) through the sand bar at the entrance. . . Dredging required two years to complete. . . Many dredging and filling operations soon followed, and the 1890s and 1900s saw the construction of many new piers and channels in the harbor, the dredged material going to create new dry land areas. . . Further dredging was conducted at the base of Alakea Street in 1906. . . Piers were constructed at the base of Richards Street in 1896, at the site of Piers 17 and 18 in 1901 to accommodate sugar loading in 1901, and at Piers 7 and 12 in 1907 [Coles et al. 1999:10].

An 1887 Hawaiian Government Survey map of Honolulu by W. A. Wall shows continued urban expansion of the Downtown Honolulu area. Of particular note is the dredging and land reclamation associated with the development of Honolulu Harbor (Figure 34).

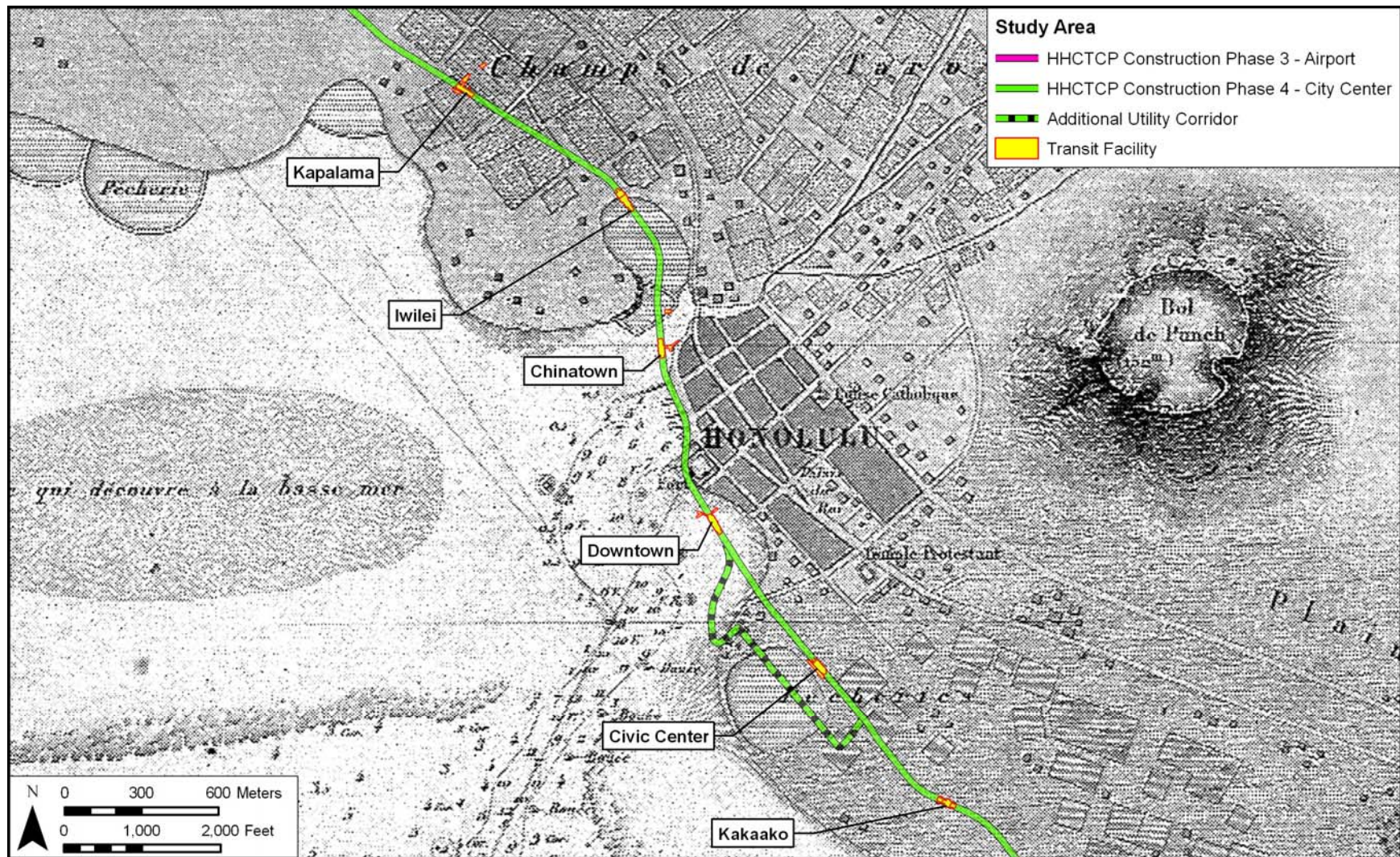


Figure 32. 1855 Map of Honolulu by Lt. Joseph de LaPasse of the French vessel, *L'Eurydice* (source: Fitzpatrick 1986:82-83), showing urban development in the vicinity of the Downtown Honolulu portion of the study area. Note that large portions of the study area are indicated to be either at the edge of the coastline or are completely offshore.

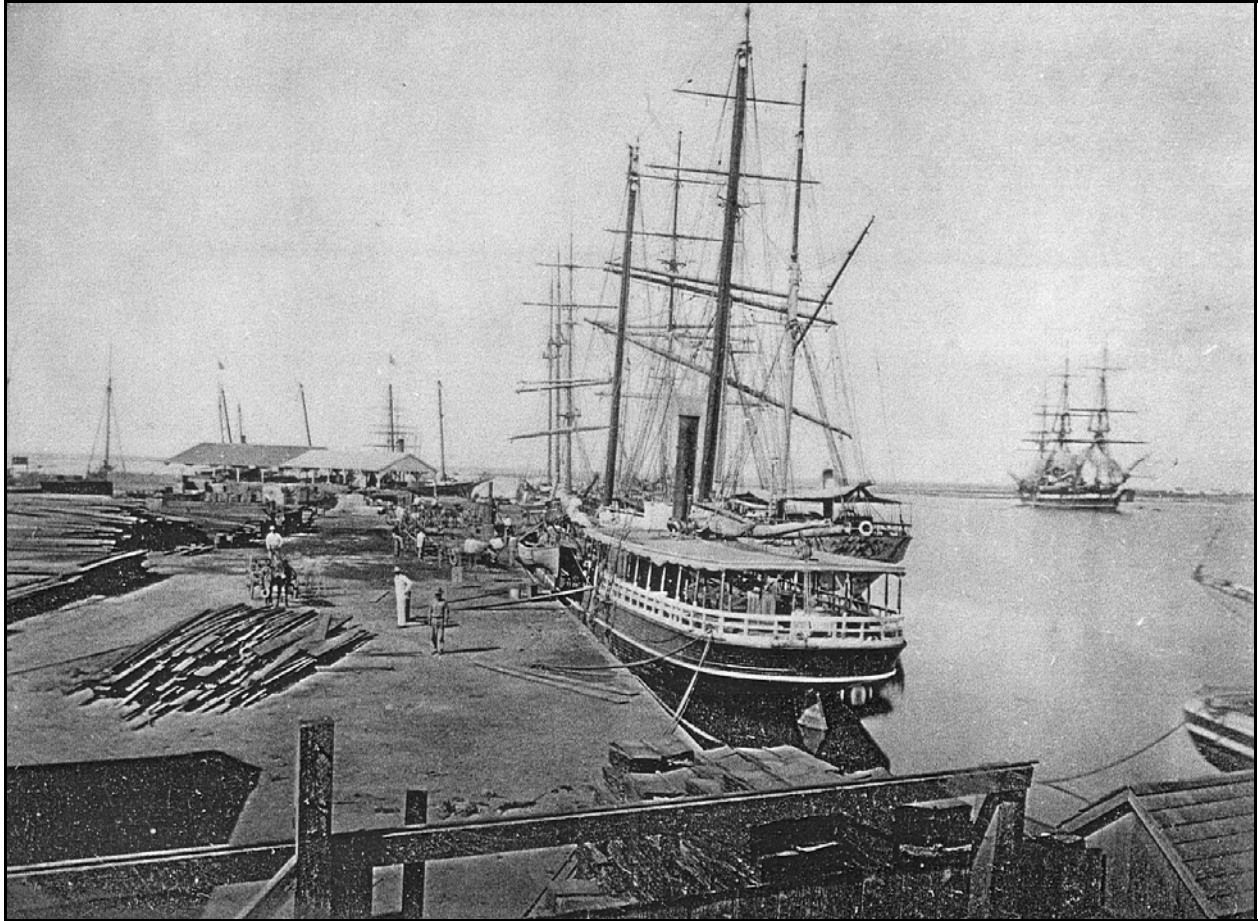


Figure 33. Honolulu Harbor Esplanade at the base of Fort Street, ca. 1880 (Bishop Museum Archives)

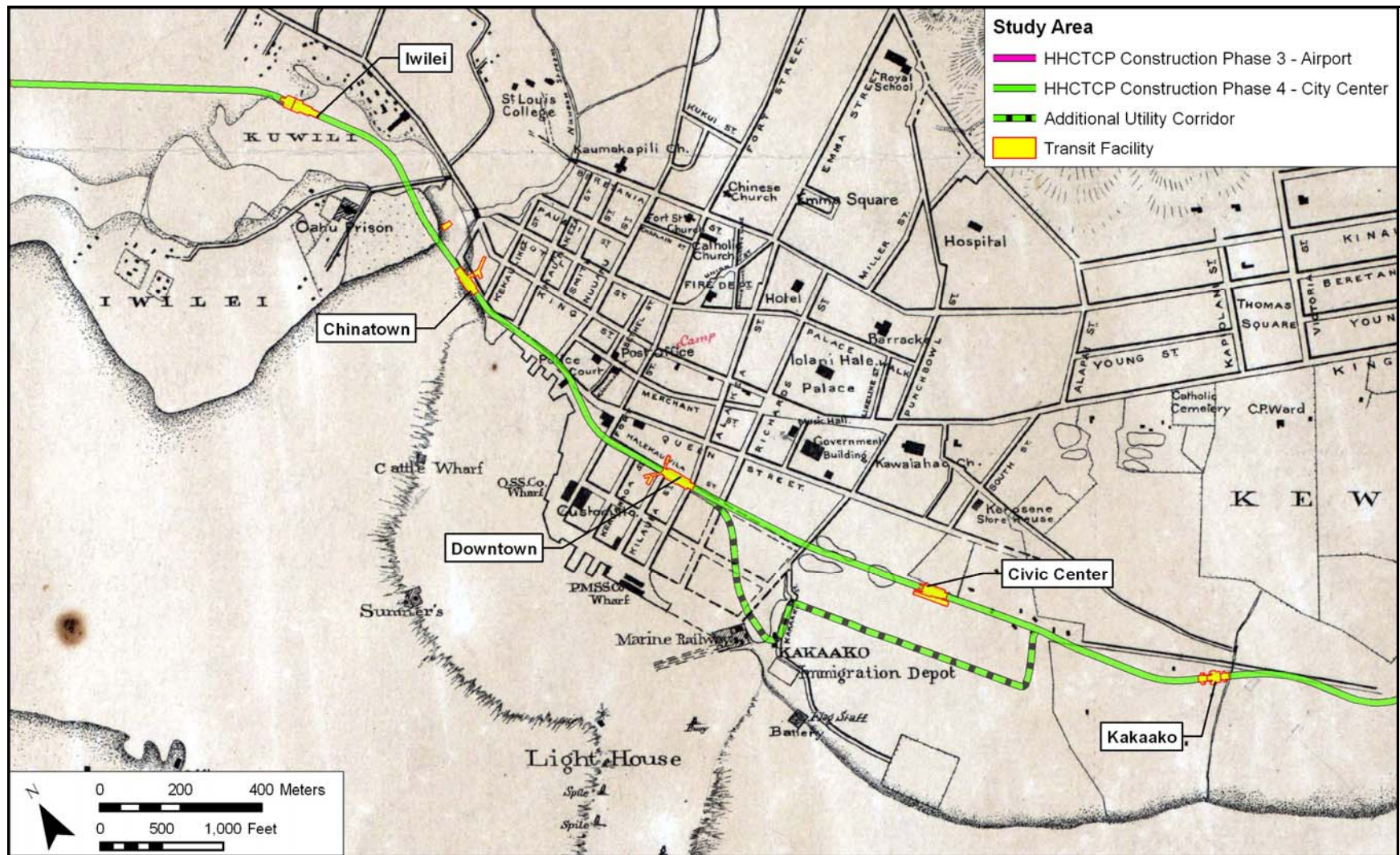


Figure 34. 1887 Hawaiian Government Survey Map of Honolulu and Vicinity, by W. A. Wall (source: Library of Congress), showing continued urban expansion of the Downtown Honolulu area, particularly dredging and land reclamation associated with Honolulu Harbor

Following the initiation of Dillingham's O'ahu Railway and Land Company (OR&L), a railroad track was built across Kūwili Fishpond in 1889. This and the construction of associated infrastructure such as a depot, buildings, store houses, and stations would eventually lead to the expansion of Honolulu Harbor toward Kapālama Basin and Iwilei. John Hungerford writes of OR&L's influence on the harbor:

Honolulu in the years to follow was outgrowing its small harbor where, according to an entry on company records, on a single day in 1901 were 24 deepwater sailing vessels, six of them unloading coal and four loading sugar at railroad wharves. The company had led the way, in conjunction with other private interests, in creating some 500 acres of waterfront land (Hungerford 1963:14).

The increasing prominence of the harbor and its activities over the traditional use of the fishponds and adjoining *kalo* patches becomes apparent in 1896 when an outbreak of cholera caused the infilling of Kawa Pond. Between 1895 at the beginning of OR&L's development of their railroad and 1901, Kūwili Pond was filled and an estimated 6,000,000 cubic yards of mud, sand, loose coral as well as blasted hard coral was used to fill low land near the harbor and terminal (McGerty et al. 1997:20).

Dredging of the harbor continued into the twentieth century. Following annexation of the Hawaiian Islands in 1898 and the establishment of the Honolulu Engineer District in 1905, federally funded dredging of the harbor was initiated and completed in December 1908. It was at this time that reclamation projects would create Sand Island; as a history of the Honolulu Engineer District notes:

As anticipated, enlarging the small island just seaward of the lighthouse calmed the entire harbor; indeed reclamation of this land, today known as Sand Island, has eliminated the need for a breakwater in Honolulu Harbor...A separate project to reclaim Quarantine Island, a low, swampy area on a reef in the harbor, was adopted in February 1906 and was carried out by contract until funds were exhausted in March 1908. Continued reclamation over the next four decades would result in the absorption of Quarantine Island into an enlarged Sand Island [Van Hoften 1970:3].

In 1872, the small island off Iwilei—"Ka-moku-ākulikuli"—became the site of a quarantine station to handle the influx of immigrant laborers drawn to the islands' developing sugar plantations. The site is described as "little more than a raised platform of sand and pilings to house the station, with walkways leading to the harbor edge wharf, where a concrete sea wall had been constructed" (Beechert 1991:105) and as "a low, swampy area on a reef in the harbor" (Van Hoften 1970:3). By 1888, Kamoku'ākulikuli Island had been expanded and was known as "Quarantine Island." A pier and tramway had been built connecting the island to Honolulu Harbor (Renard 1975:A4) (Figure 35). If vessels arrived at the harbor after 15 days at sea and contagious disease was aboard, quarantine and disinfecting procedures were required at Quarantine Island (Renard 1975:A3).

Quarantine Island became the largest United States quarantine station of the period, accommodating 2,255 individuals (Renard 1975:A6). This space included two hospitals and a crematorium. Besides operating as a quarantine, the station had other objectives such as implementing plague-preventive measures, immigration inspection, and serving as a marine-

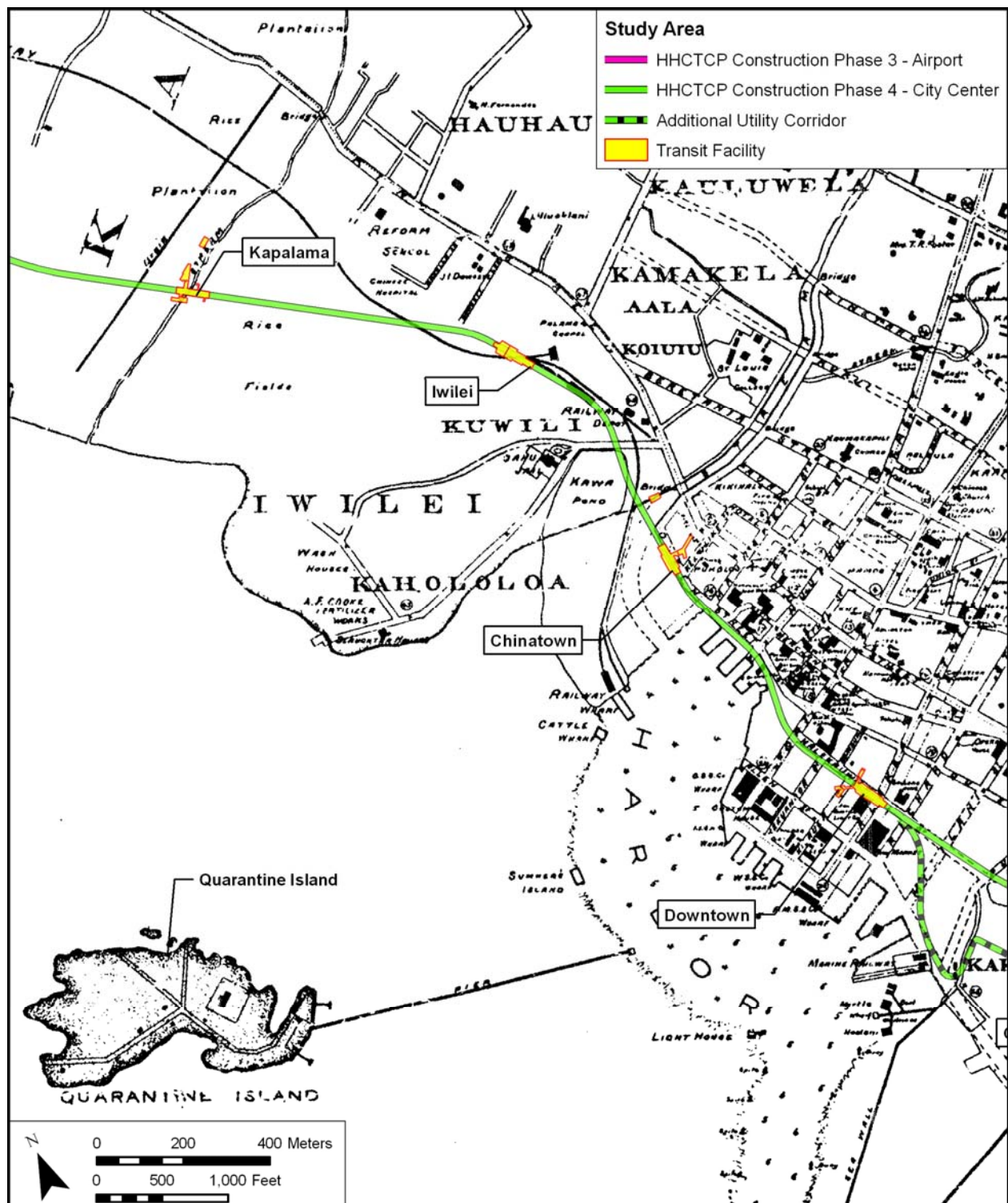


Figure 35. 1897 Map of Honolulu by M.D. Monsarrat (Reg. Map 1910), showing the location of Quarantine Island, site of the modern-day Sand Island

hospital relief (Renard 1975:A9). During President Wilson's administration in 1920, Sand Island was taken under the control of the War Department. Despite this, quarantine measures continued there until 1927.

Before World War II, the military used Sand Island as a gun emplacement (Battery Sand Island) and for a small military camp (Camp Sand Island) (Bennett 2002:66-68). After the attack on Pearl Harbor in 1941, 400 Japanese were rounded up in the immediate aftermath and placed at the Honolulu Immigration Station. By May 1942, an internment camp had been built at Sand Island, but the military decided that this installation was too difficult to guard during a feared second attack, so the detainees were moved to an inland camp at Honouliuli on March 1, 1943 (Bernardo 2004).

During reclamation projects in the first two decades of the twentieth century, Sand Island and Quarantine Island were joined to the Kalihi Kai peninsula. In 1925 and 1926, a channel was dug from the Kalihi Channel into Kapālama Basin creating a true island out of "Sand Island." By 1941, reclamation projects and dredging of the harbor had enlarged Sand Island to 410 acres (Renard 1975:A20). Another 100+ acres were added to Sand Island between 1940 and 1945 from the spoils of Ke'ehi Lagoon's seaplane channel, located on the western seaward boundary of the project area. Between 1946 and 1952, the Ke'ehi seaplane channels were used by Naval air squadrons for transporting "Mars" flying boats between Hawai'i and the continental U.S. A dirt causeway was constructed connecting Sand Island to the mainland in 1943 (Renard 1975:A29).

3.3.4.2 Public Transportation Systems

The first public transport system in Honolulu was the Spring Pioneer Omnibus Line, established in 1868 as a horse and wagon operation in Downtown Honolulu, extending up to Nu'uano and School Streets (Simpson and Brizdle 2000:11).

In 1884, the first rail system was developed by an English firm called Skinner and Company, who called their company Hawaiian Tramways Limited. This outfit consisted of mule-drawn tramway cars pulled along steel rails, as shown in a turn-of-the-century photograph (Figure 36). The company had 12 miles of rail in Honolulu by 1888, and by 1896 the railway system extended to Nu'uano Valley and the "native settlements at Palama" (Simpson and Brizdle 2000:18).

In 1901, electric streetcars were introduced by the Honolulu Rapid Transit Co. The mule-drawn trams could not compete and the transit company bought the Tramways Co. firm in 1903. The rails were soon dismantled and the horses and mules were sold. The majority of people greatly approved of the change, as shown in this remembrance from 1903:

There was the horrid pipe smoked by the man on the front platform that the ladies will never miss, nor will they grieve over the loss of the profane man on the rear platform, the intoxicated man snoring in the corner, the Chinaman with a basket of ducks, the ponderous native woman with a game rooster in her lap and the wet passenger just come in out of the rain. The long—O, how long—pauses on switches will have to be endured no more. Those rainy day episodes, when the car would run off the track and every man would get out in the mud and work the plaguey thing forward and backward till it got on the rails again, are thought of now only with smiles. The balking of the mules, the jolting and pitching of the car



Figure 36.1898 photograph of the Hawaiian Tramways Co. mule-drawn tram cars on steel rails on the corner of Fort and Hotel Streets (view to the south), Honolulu (J.J. William Private Collection, reprinted in Simpson and Brizdle 2000:16)

and the acrimonious debates with the driver were harmless incidents that will eventually be forgotten. (*Paradise of the Pacific*, Oct. 1903, in Simpson and Brizdle 2000:19)

3.3.4.3 Oahu Railway and Land Company

A consortium of businessmen, led by Benjamin Dillingham, created the Oahu Railway and Land Company (OR&L) in February 1889. The railroad officially opened on November 16, 1889; at that time the line extended only between 'Aiea and Honolulu.

The company's Honolulu depot was constructed on land between Kūwili I Fishpond and North King Street, just west of the intersection of North King Street and Iwilei Road (100 m southeast of the proposed Iwilei Station). An 1890 photograph (Figure 37) shows the new depot, built on pilings on top of a portion of the recently filled Kūwili I Fishpond. An 1897 map of Honolulu by M.D. Monsarrat shows the depot partially beneath the proposed footprint of the Iwilei Station and under a portion of the associated southeastern bound project alignment (Figure 38).

John Hungerford describes the railroad's Honolulu facilities:

The first right-of-way from Honolulu station was only two feet above high tide. It, with the six acres of yards and station site, was mud filled taken from the salt marsh of Kuwili Pond or brought in from Moanalua. Discarded ship's ballast was also used as footing for the emerging ground [Hungerford 1963:13].

In 1899, through an agreement between the Hawaiian Government, the OR&L Co. exchanged land in the vicinity of Honolulu Harbor for Kawa Pond, which had recently been filled, and a large portion of the adjacent Kūwili I Pond. Between 1899 and 1901, ongoing Honolulu Harbor improvements created 6,000,000 cubic yards of mud, sand, and loose coral through dredging. Additionally, several thousand cubic yards of hard coral were blasted. This material was used to fill the low areas of the former Kawa and Kūwili I Fishponds that were adjacent to the OR&L harbor facilities and terminal. In 1903, subsequent to the reclamation of Kawa Pond (1895-1897) and Kūwili I Pond (1895-1901), OR&L Co. announced that it had moved and greatly expanded its terminal (McGerty et al. 1997:21-23). The new passenger and cargo station was located on the former Kūwili I Fishpond, immediately north of Iwilei Road. The expansion of the OR&L Co.'s transportation and cargo routes, with the associated harbor traffic, was one of the primary factors behind the industrial development of the Iwilei area of Honolulu.

3.3.4.4 The 1900 Chinatown Fire

In 1852, there were only about 71 Chinese living around Honolulu, most of whom had come to the islands as merchants and continued to carry out this trade. In 1852, sugar planters began to import large numbers of Chinese "coolies" to work on their sugar plantations. Once their contracts were filled, some of the workers moved to Honolulu to open their own businesses in the area that soon came to be known as Chinatown. The unsanitary and over-populated area alarmed the white business class who noted that "Most Chinese businesses were housed in decaying building on the depressed lower blocks of Nu'uanu and Maunakea Street, and in



Figure 37.1890 photograph of the O'ahu Railway and Land Company Depot built on the filled in Kūwili I Pond (John Cotton Wright collection; photo reprinted in Scott 1968:858)

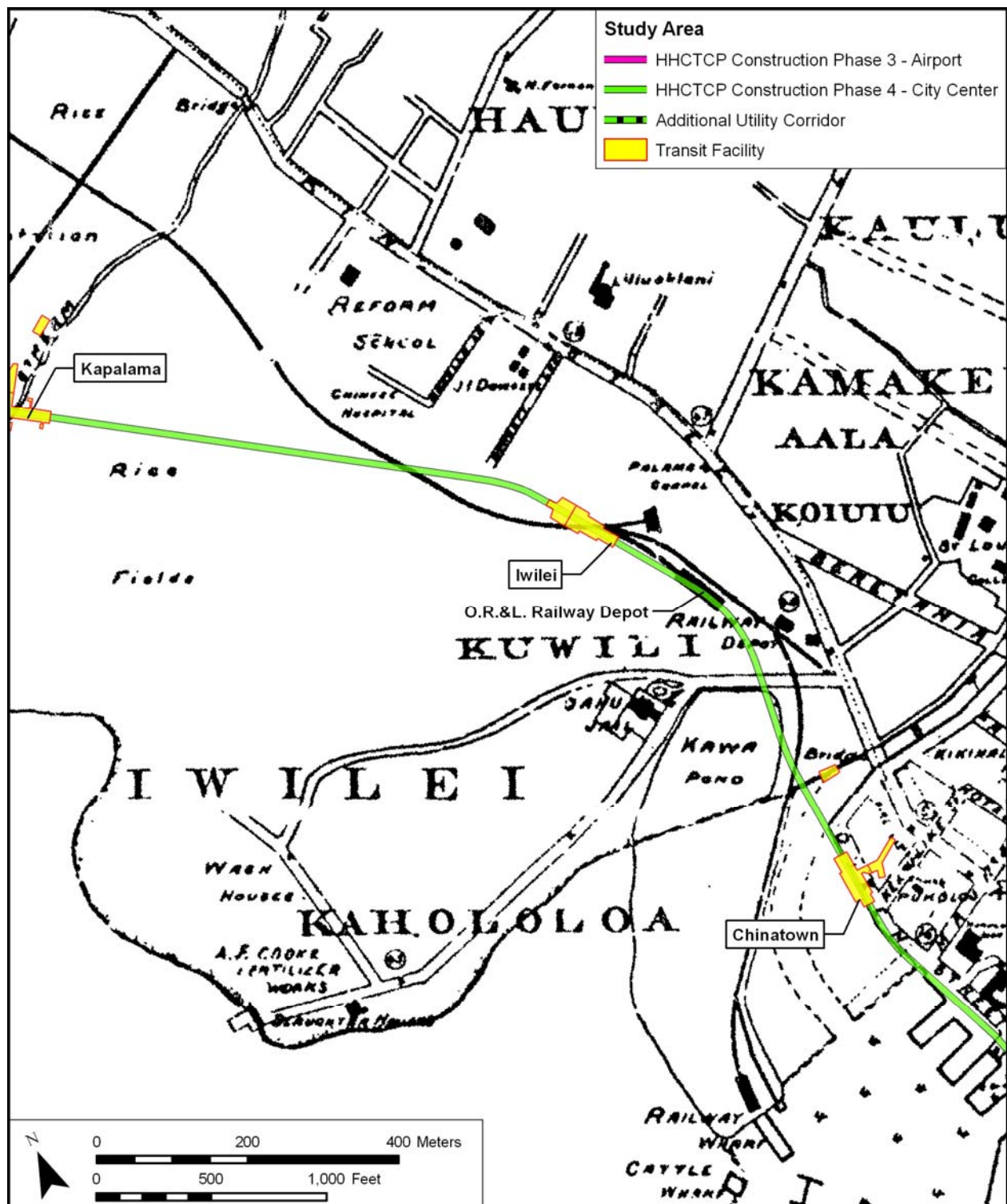


Figure 38. 1897 Map of Honolulu by M.D. Monsarrat (Reg. Map 1910) showing the location of the Honolulu OR&L Co. railway depot in relation to the study area

Chinatown the womanless coolies congregated to gamble, smoke opium or simply pass the time” (Daws 2006:300).

In 1899, the first case of bubonic plague was identified in Hawai'i, in a Chinese bookkeeper named You Chong. Two other cases were reported on the same day, and the Board of Health laid down a strict quarantine for Chinatown, that area of Honolulu bound by Nu'uanu Street, Kukui Street, River Street, and Queen Street. Within this area about 7,000 people, primarily Chinese and Japanese immigrants, lived and worked (Iwamoto 1969:122-124). Since the disease had broken out in the immigrant's area of Honolulu, all Chinese and Japanese were barred from leaving Honolulu for other ports.

From December 12, 1899 to March 31, 1900, 71 cases were reported, with 61 deaths; 41 of whom lived within the established Chinatown quarantine area. The Board of Health concluded that they could not contain the plague and decided the best remedy was to set “sanitary fires” to infected wooden buildings. A total of 41 controlled fires were set between December 31, 1899 and August 13, 1900:

. . . on December 30, after careful deliberation, the Board of Health chose fire as the ‘surest, most thorough, and most expeditious’ method. Fire would destroy the plague germs, kill rats, cleanse the soil and open it up to the purifying influence of sun and air, and would prevent any occupancy of the premises until a safe period of time had elapsed [Iwamoto 1969:124].

Infected patients were moved to a quarantine camp at Kaka'ako. Some people, not necessarily patients, whose houses were burned were housed at the barracks of the Kaka'ako Rifle Range. Their belongings were stored in the cellars of Kaumakapili Church.

On January 20, 1900, a fire was set between Kaumakapili Church and Nu'uanu Avenue, which quickly got out of control. Rising winds swept burning embers to the roof of the church; the fire then jumped to several other blocks and then to the wharves:

By 1:30 p.m. the fire began making its way from Beretania Street along Achi Lane toward Kukui Street. People feared that the mauka section of the city would be destroyed. Chinatown refugees rushed back to save belongings, but were driven back by fire and smoke; they formed a seething mob near the bridge and Kukui Street. . . . The Chinese consul and vice consul also circulated among the people and tried to pacify them, since at this time the Chinese believed that the Board of Health had purposely burned their homes [Iwamoto 1969:130-131].

No one was killed in the fire, but Chinatown was destroyed. Many people were homeless and bereft of all belongings, which were lost when Kaumakapili Church burned to the ground. No additional patients were identified with the disease in April 1900, and the Hawaiian Islands were declared free of plague (Iwamoto 1969:125, 129).

The Hawai'i Chinatown Historic District (District No. 73000658) was placed on the National Register of Historic Places in 1973. The Chinatown Historic District also has been designated on the [Hawai'i] State Inventory of Historic Places (SIHP) # 50-80-14-9905.

3.3.5 Twentieth-Century Development

As Honolulu became more populated throughout the 20th century, the areas surrounding the harbor became increasingly important for commercial construction. A review of historic maps spanning from 1919 to 1953 indicates that major development in the Downtown Honolulu area was focused around Honolulu Harbor and Sand Island (Figure 39 through Figure 42). This entailed extensive dredging for harbor improvements and land reclamation into coastal tidal flats.

Today, the harbor area still functions as the state’s major port facility. Additionally, this area includes the Aloha Tower Marketplace and the Maritime Museum. Farther inland lays a dense commercial area, as well as several government buildings, including the Federal Building, State Court, City Hall, and the State Capitol. Significant historic resources near the archaeological study area include Washington Place, Mission Homes Museum, and ‘Iolani Palace.

3.4 Kaka‘ako

3.4.1 Early Post-Contact History

The modern urban district known as Kaka‘ako is significantly larger than the traditional area of the same name, which is described in mid-nineteenth century documents and maps as a small *‘ili* (traditional land unit) within the *ahupua‘a* (traditional land division) of Honolulu. In addition to the *‘ili* of Kaka‘ako, the modern Kaka‘ako area also includes lands once known as Ka‘ākaukui, Kukulūāe‘o, and Kewalo (see Figure 11 and Figure 12).

The modern Kaka‘ako is located between two longtime centers of population: Honolulu, known as Kou in older times, and Waikīkī. In Waikīkī, a system of taro *lo‘i* (irrigated terraces) fed by streams descending from the Makiki, Mānoa, and Pālolo Valleys covered the coastal plain, and networks of fishponds dotted the shoreline. Similarly, Kou—the area of Downtown Honolulu surrounding the harbor—possessed shoreward fishponds and irrigated fields watered by streams descending from the Nu‘uanu and Pauoa Valleys. Unlike these two densely populated areas, Kaka‘ako had no large expanse of irrigated taro patches; instead, the area consisted of exposed coral flats dotted with salt pans and fishponds with habitations scattered along the shore and along trails that connected Honolulu to Waikīkī.

An early, somewhat generalized, depiction of the early post-contact Kaka‘ako area is shown on an 1817 map (see Figure 10) by Otto von Kotzebue (1821), commander of the Russian ship *Rurick*, who had visited O‘ahu the previous year. Kotzebue’s map illustrates that the land between Pūowaina (Punchbowl Crater) and the shoreline, which would include the Kaka‘ako area, formed a “break” between the heavily populated and cultivated centers of Honolulu and Waikīkī. The area is characterized by fishponds, salt ponds, trails connecting Honolulu and Waikīkī, and occasional taro *lo‘i* and habitation sites.

In the early post-contact period, Kaka‘ako was a portion of the area called the “salt plains of Honolulu” (Bingham 1847:92-93). The Protestant missionary church, established in 1820 (Kawaiaha‘o Church and the Mission Houses), was built at the edge of this dry plain. Converted Hawaiians, including many Hawaiian chiefs and members of the monarchy, began to build houses in the same area to be near the mission. This appears to have been a major factor pulling the development of Honolulu toward Koko Head (eastward) away from Nu‘uanu Stream and into an area that had been relatively less inhabited in pre-contact times.

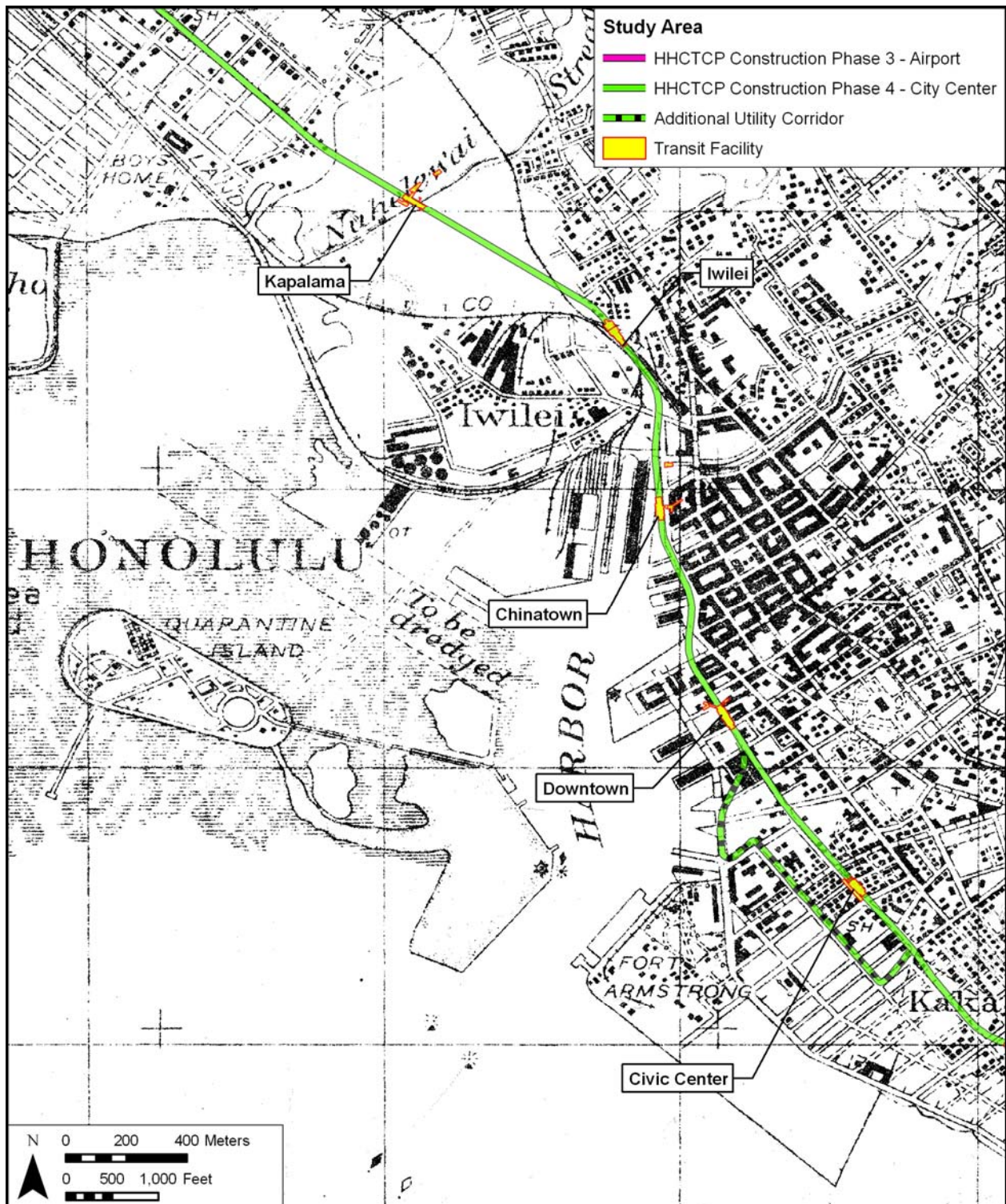


Figure 39. 1919 War Department topographic map, Honolulu Quadrangle, showing the Downtown Honolulu portion of the study area

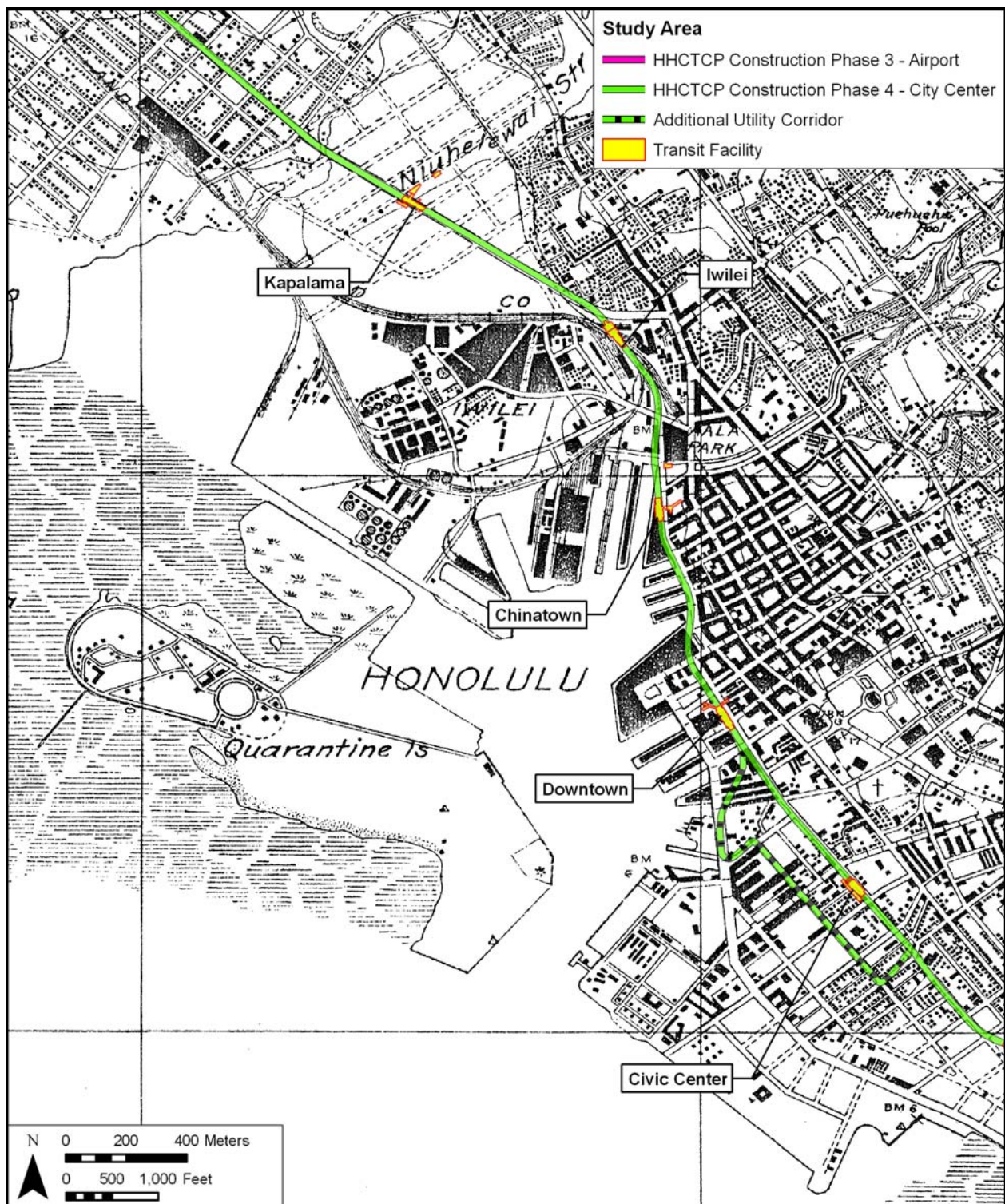


Figure 40. 1927-28 U.S. Geological Survey topographic map, Honolulu Quadrangle, showing the Downtown Honolulu portion of the study area

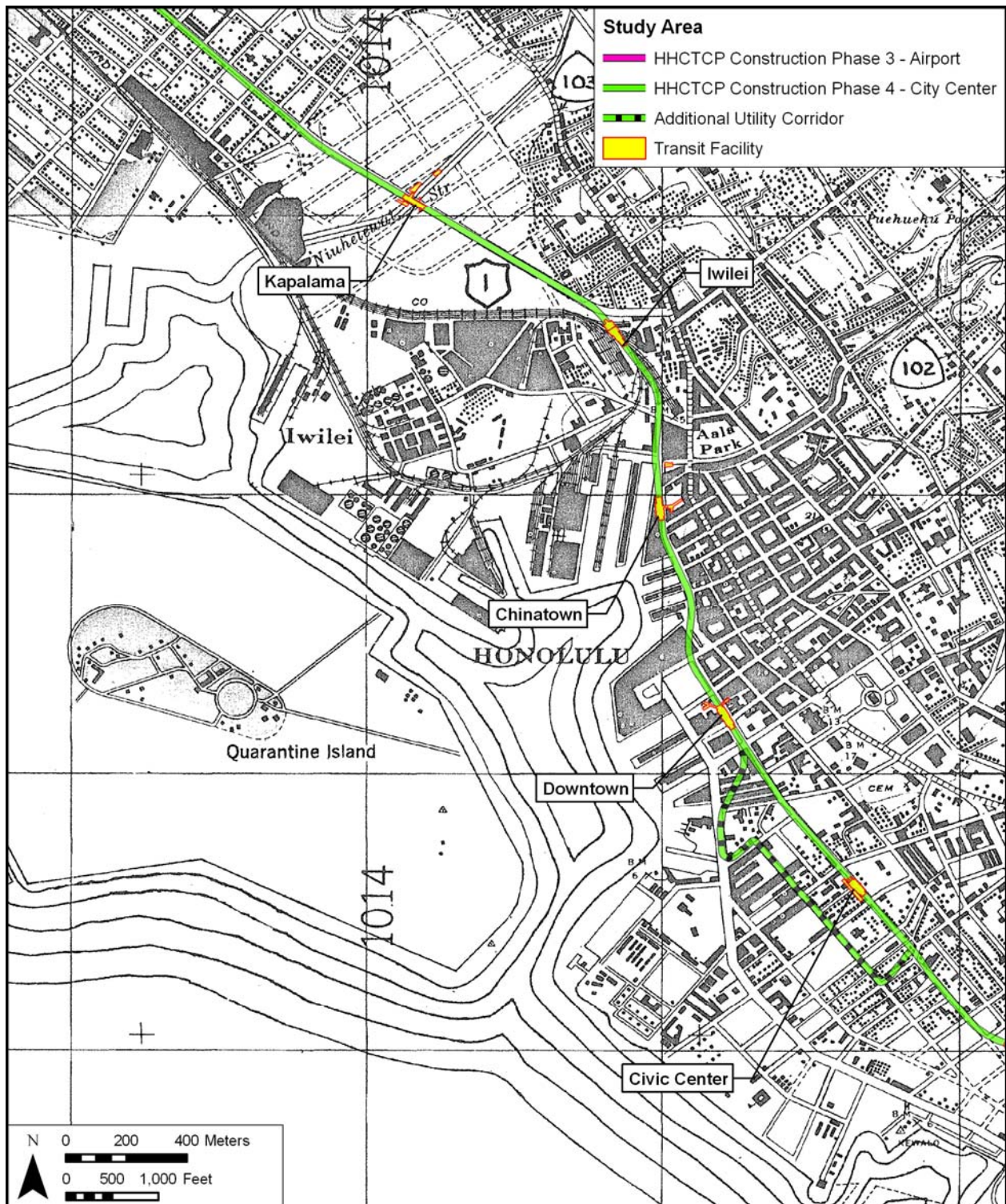


Figure 41. 1943 War Department topographic map, Honolulu Quadrangle, showing the Downtown Honolulu portion of the study area

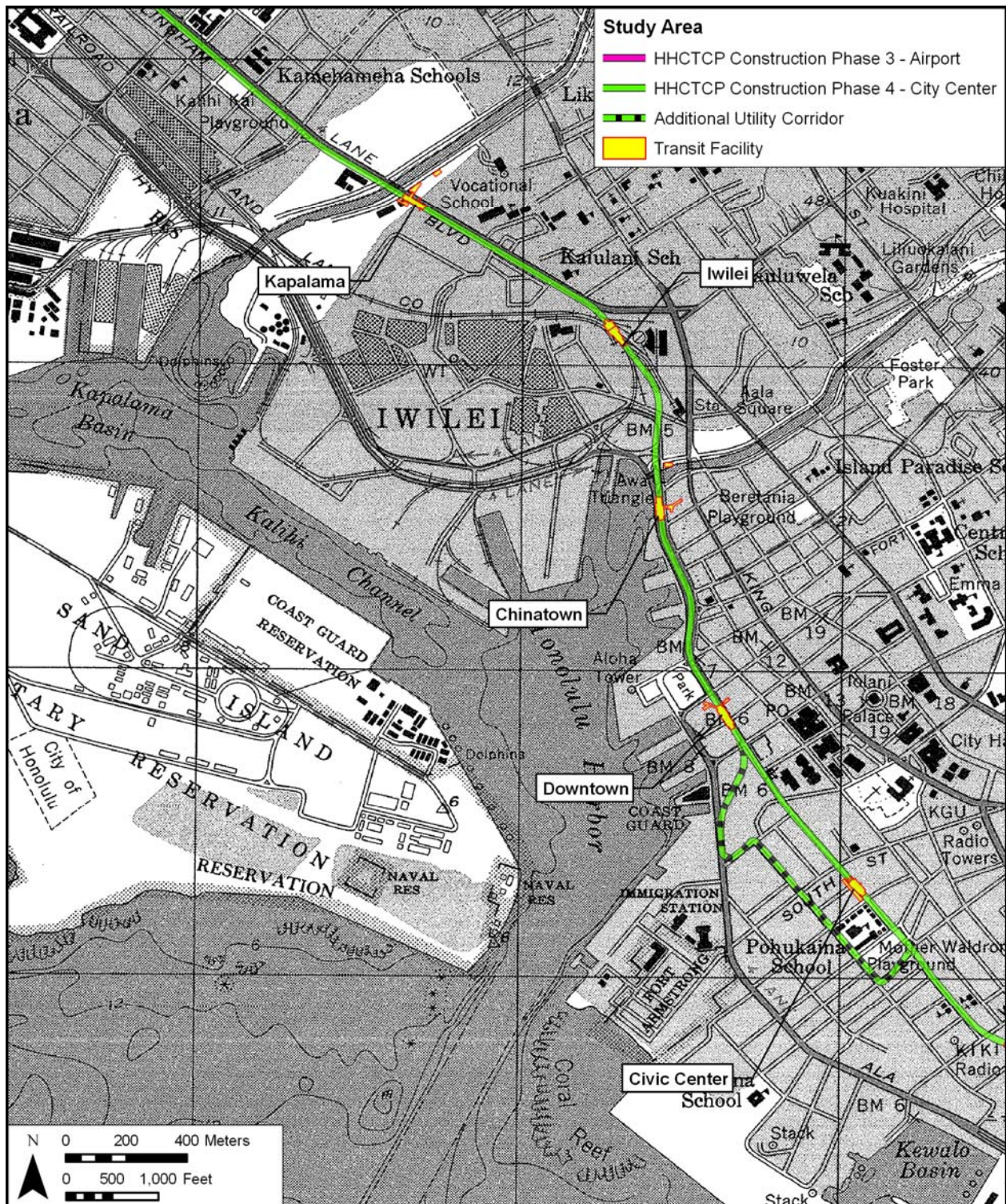


Figure 42. 1953 Army Map Service topographic map, Honolulu Quadrangle, showing the Downtown Honolulu portion of the study area

Gilman (1904) describes the area around Kawaiaha'o Church as a "barren and dusty plain" and further elaborates that:

Beyond the street [east of Punchbowl Street] was the old Kawaiahao church and burying ground. A more forsaken, desolate looking place than the latter can scarcely be imagined. One, to see it in its present attractiveness of fences, trees and shrubbery, can hardly believe its former desolation, when without enclosure, horses and cattle had free access to the whole place [Gilman 1904:89].

That the environs of the missionary enclave and Kawaiaha'o Church were indeed "forsaken" and "desolate looking" in the 1820s when the missionaries first settled there is also noted in the memoirs of the American missionary C. S. Stewart who, arriving on Maui after living at the mission, declared Lahaina to be "like the delights of an Eden" after "four weeks residence on the dreary plain of Honoruru" (Stewart 1970:177).

The barrenness of the Kaka'ako area is also illustrated in two sketches, one made in 1834 when Kawaiaha'o Church was still a long, grass-thatched building (Figure 43), and one made in 1850 after the grass hut had been replaced by a large coral stone structure with a steeple (Figure 44). Between Kawaiaha'o Church and the sea, which is the Kaka'ako area, there are only a few scattered huts along the shore and aligned along the inland trail (now covered by King Street). An 1887 photograph of the area also shows the marshy nature of the area, with only scattered houses near the ponds or near the shore *makai* of Kawaiaha'o Church (Figure 45).

3.4.2 Mid-19th Century and the Māhele

Among the first descriptions of Kaka'ako by the Hawaiians themselves are the testimonies recorded during the 1840s in documents associated with LCA and awardees of the Māhele. The LCA records indicate that the traditional Hawaiian usage of the region and its environs may have been confined to salt making and farming of fishponds, with some wetland agriculture in those areas *mauka* or toward Waikīkī at the very limits of the field system descending from the Makiki and Mānoa Valleys. However, the testimonies do indicate that the area was lived on and was shaped by Hawaiians before the 19th century. The LCA records also reveal that midway through the 19th century, taro cultivation, traditional salt making, and fishpond farming activities continued in the Kaka'ako area. These activities and the land features that supported them would later be eliminated, or buried, during the remainder of the nineteenth century by the urbanization of Honolulu.

By the time of the Māhele, Honolulu was firmly established as the capital of the Hawaiian Islands and the city boundaries were spreading out to encompass Kaka'ako. The marginal swamp and intertidal lands in the *makai* portion of Kaka'ako became more valuable, and more than a third of the awards in this sub-area were to the royal family, loyal retainers, and other important people. The LCAs near Downtown were for large house sites, many with multiple dwellings. The LCAs closer to Waikīkī were smaller and were for house lots with adjacent *lo'i* and the rights to fishponds and salt lands.

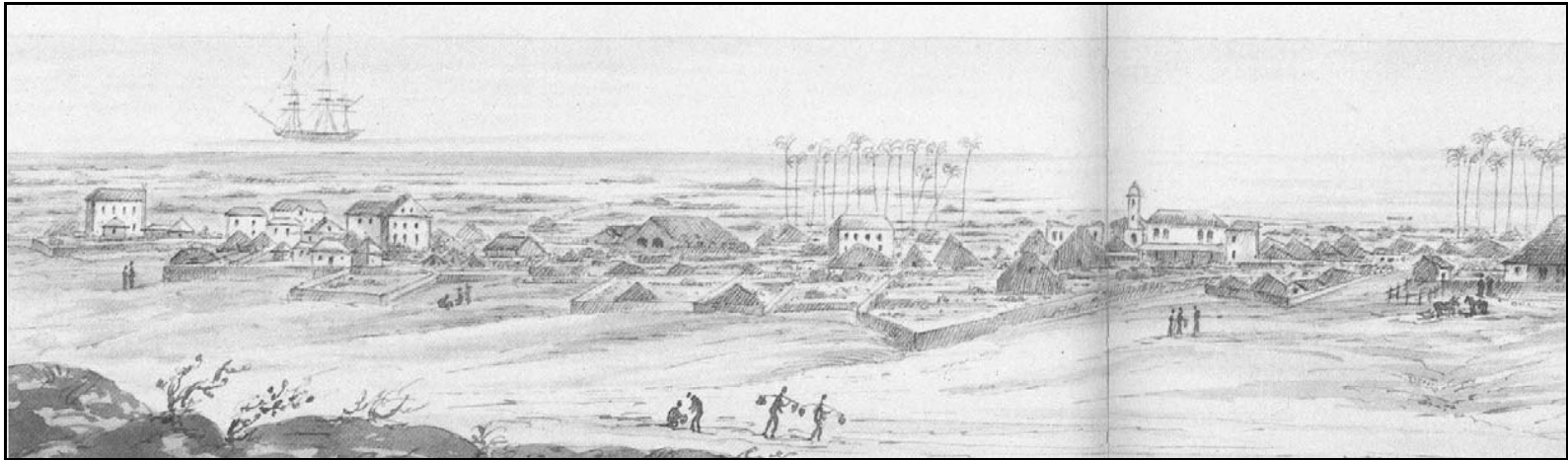


Figure 43. Portion of 1834 sketch by anonymous illustrator titled “Town of Honolulu: Island of Oahu: Sandwich Islands” (original sketch at Bernice P. Bishop Museum; reprinted in Grant 2000:64-65)

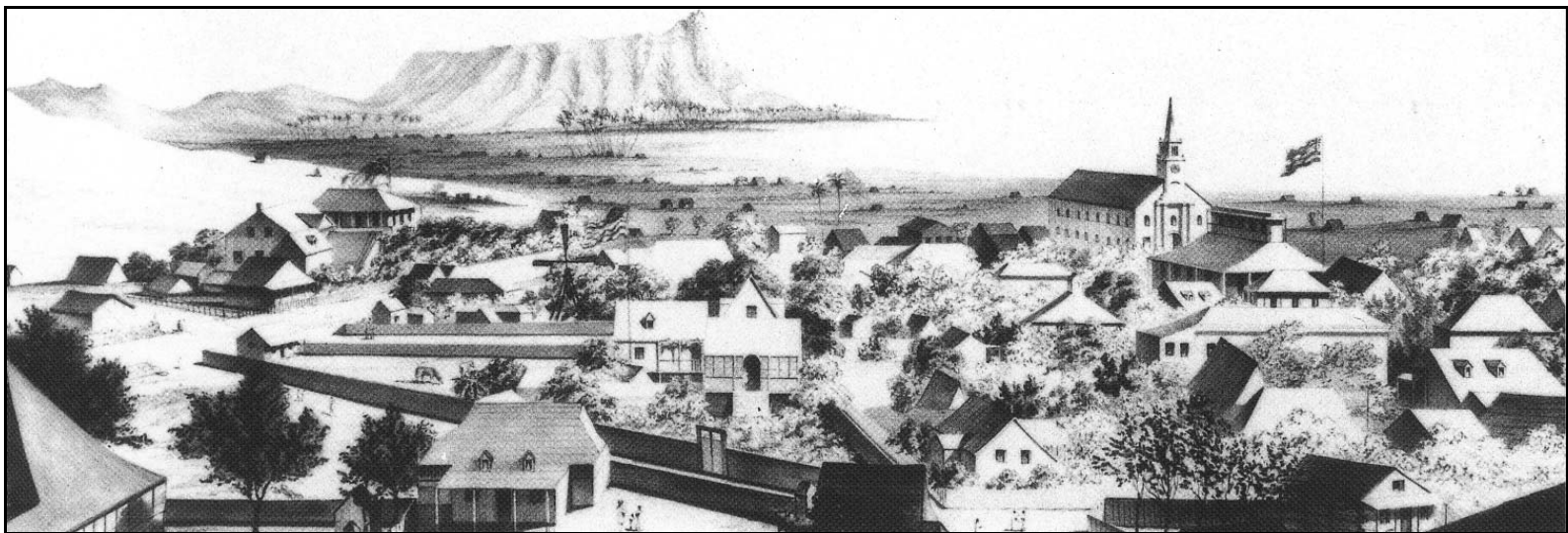


Figure 44. 1850 sketch by Paul Emmert (original sketch at Hawaiian Historical Society; reprinted in Grant 2000:5)

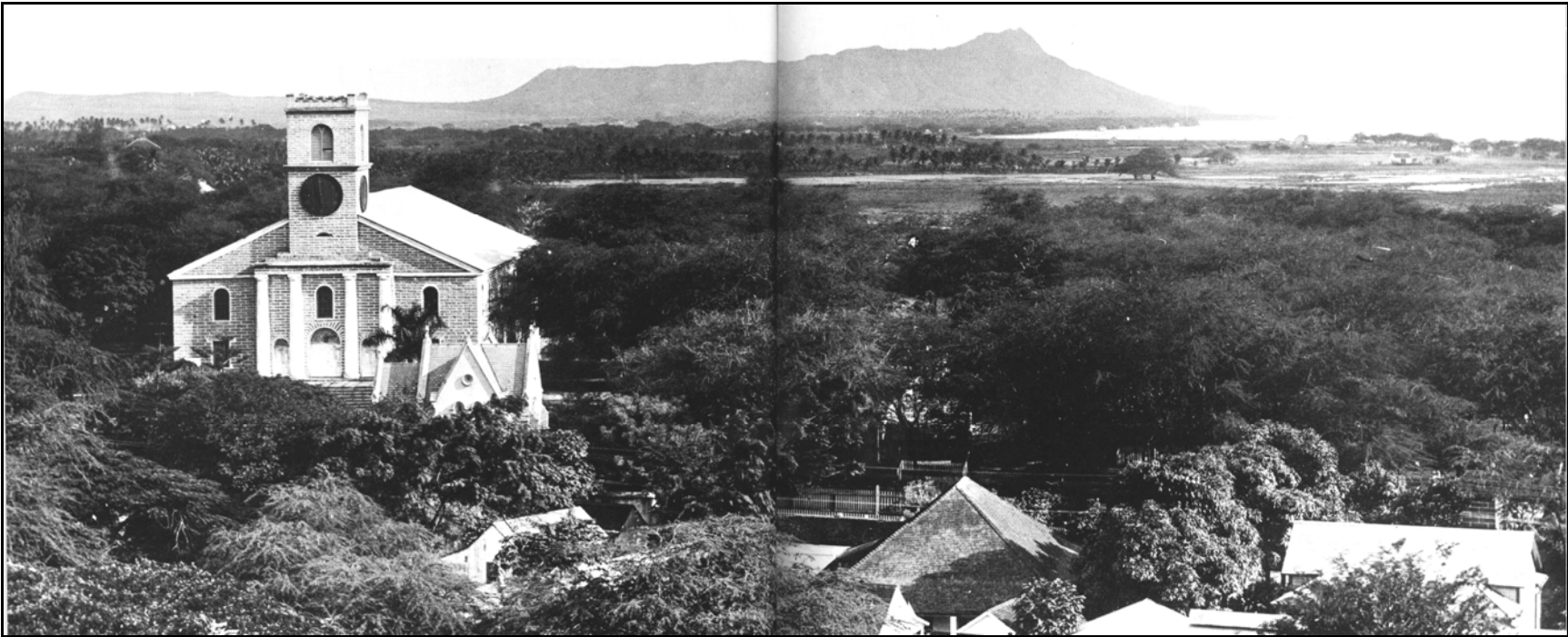


Figure 45. Circa 1887 photograph of Honolulu and Waikīkī; Kawaiahaʻo Church in left foreground; the Kakaʻako area is within the marshlands seen in the right upper background (original photograph at Hawaiʻi State Archives, Henry L. Chase Collection; reprinted in Stone 1983:84-85)

A review of historic maps of Kaka‘ako indicate 16 LCAs in the vicinity of the study area (Figure 46 and Table 5). Most of the LCAs in the vicinity of the study area were small awards containing house lots, *lo‘i*, and ponds (used for salt procurement or aquaculture) (see Figure 46 and Table 5). However a few of the LCAs in the vicinity (LCAs 677, 7712, 7713, and 10605) consist of portions of large awards that were given to *ali‘i*.

LCAs 677 and 7712 were awarded to Matio Kekūanao‘a, a high *ali‘i* who was a close friend to Kamehameha II and was married to Kīna‘u, the daughter of Kamehameha I.

The ‘*ili* of Ka‘ākaukukui (LCA 7713) was awarded to Victoria Kamāmalu, the sister of Kamehameha IV and Kamehameha V. Ka‘ākaukukui consisted of three non-contiguous sections, a type of ‘*āina* (land) called a *lele*.

The ‘*ili* of Kewalo (LCA 10605) was awarded to Kamake‘e Pi‘ikoi, wife of Jonah Pi‘ikoi (awardee of Pualoalo ‘*Ili*), as part of LCA 10605, ‘*āpana* (lot) 7. The award was shared between husband and wife (Kame‘eleihiwa 1992:269). Kewalo was a large 270.84-acre land section extending from Kawaiaha‘o Church to Sheridan Street. This land section had numerous large fishponds, which were awarded as part of the claim to Pi‘ikoi.

Two of the LCAs in the vicinity of the study area consisted of “Fort Lands” (F.L.) that were set aside from the Government Lands for the support of the garrison of the Fort at Honolulu. Only one *lo‘i* and one house lot were noted, but numerous ponds were listed: four ponds (function not listed) and eight *ki‘o pua* (ponds for raising fry, or fish hatchlings).

3.4.3 Late 19th Century

3.4.3.1 The 1874 Transit of Venus Observatory at ‘*Āpua*

On the 1884 map of Kewalo (Figure 47), an area labeled “Transit of Venus Observatory” is labeled for a lot just *mauka* of the study area, located northwest of the Civic Center Station. This lot was used to house a large portable observatory in 1874, an event of so much interest that the lot continued to be labeled as the Transit of Venus yard many years after the portable observatory had been dismantled (Figure 48 and Figure 49).

In 1874, several astronomical teams from Great Britain traveled to different parts of the world to observe a rare transit of the planet Venus across the sun. The “purpose of the observations was to better determine the value of the astronomical unit (AU)—the earth-sun distance—and thereby the absolute scale of the solar system” (Chauvin 2004:xii). This project attracted enormous interest in Hawai‘i, and members of the Hawaiian Government Survey worked with the British team, who set up observatories on Hawai‘i, Kaua‘i, and O‘ahu Islands. Each station needed an equatorial telescope, other telescopes, a transit instrument, an altazimuth (surrounded by a portable wooden observatory with a revolving dome), and several clocks, chronometers, compasses, micrometers, reflecting circles, and artificial horizons (Chauvin 2004:51, 60).

The land in question was a 0.3-acre “open piece of grass land in the district called Apua, south of Punchbowl Street and west of Queen Street.” Several buildings were erected, including a barracks and workshop, a cookhouse, a photo hut thatched with grass, the stages (platforms) for the instruments, and a wooden palisade to enclose the lot. The observations of the Transit of Venus on December 8, 1874, in Honolulu were a great success, and the British party was feted



Figure 46. Aerial photograph (source: U.S. Geological Survey Orthoimagery 2005), showing the locations of LCAs within and in the immediate vicinity of the Kaka'ako portion of the study area

Table 5: LCAs in Kaka'ako in the Vicinity of the Study Area (in numeric order)

LCA Number	Contents of Award
Māhele Aw.61	1 house lot
100 F.L.:2	Fort Lands: 2 ponds, 5 fry ponds (<i>ki'o pua</i>), 1 taro patch (<i>lo'i</i>), 1 house lot, 1 pasture (<i>kula</i> land)
101 F.L.:1 and 101 F.L.:2	Fort Lands: 2 ponds, 3 <i>ki'o pua</i>
129:1	1 house lot (house, fence)
180	1 house lot to Mataio Kekūānao'a for Lot Kamehameha
677	1 house lot (2 houses) to Mataio Kekūānao'a
704	1 house lot (3 houses)
729	1 house lot (3 houses)
735	1 house lot (2 houses, partially fenced) to Ka'ahumanu
982	1 house lot (4 houses)
1503:1 and 1503:2	1 house lot and fishpond, 2 fishponds
1504	1 house lot (house, pond, and salt land), 2 taro patches (<i>lo'i</i>)
2405	no data
7712:6 Lot 2	Lands to Mataio Kekūānao'a
10463:1	1 house lot, 2 ponds, and a salt land
10605	Lands to Iona Pi'ikoi and Kamake'e

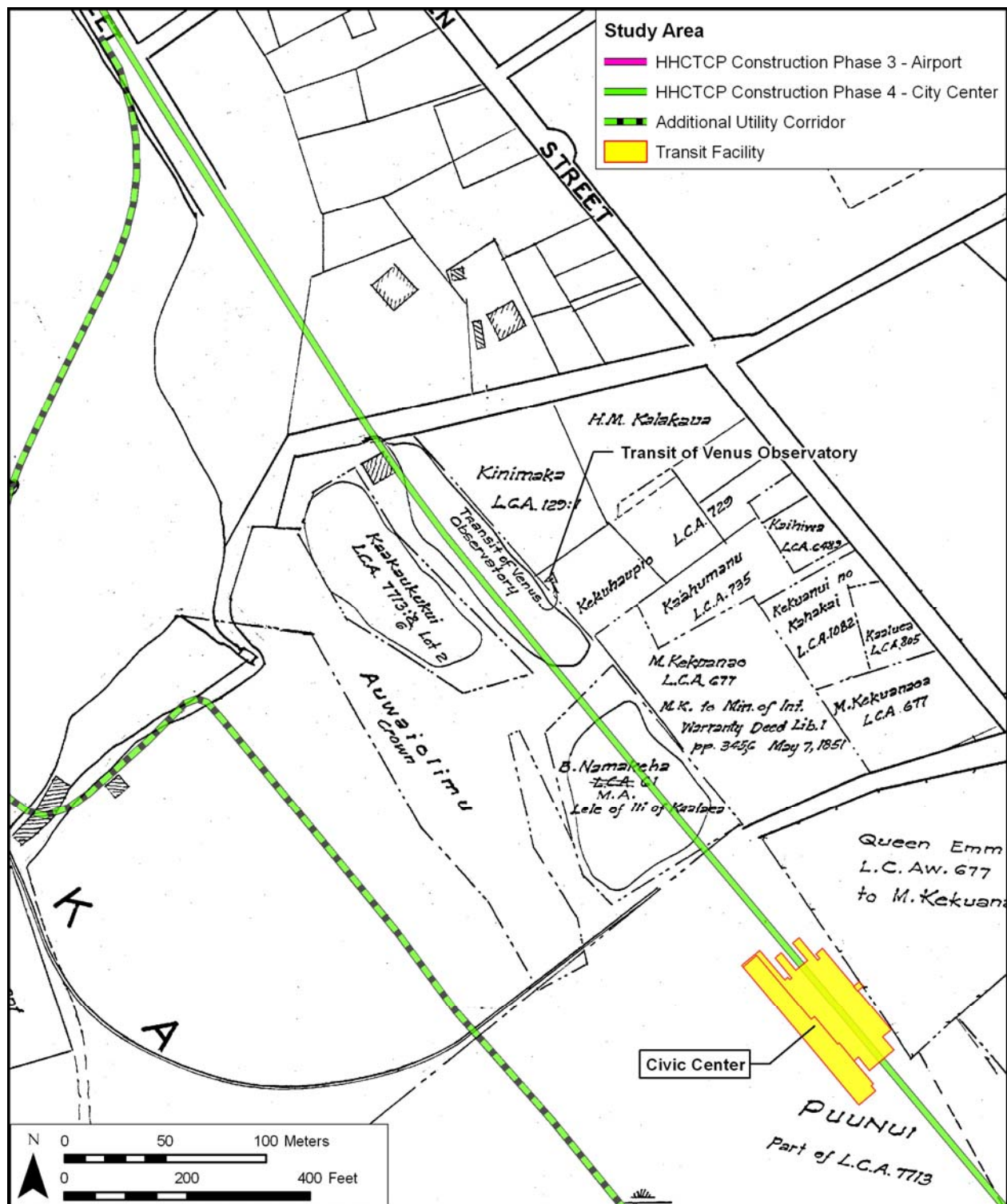


Figure 47. 1884 map of Honolulu, Kewalo section, by S. E. Bishop (Reg. Map 1090), showing the location of the Transit of Venus Observatory site in relation to the study area

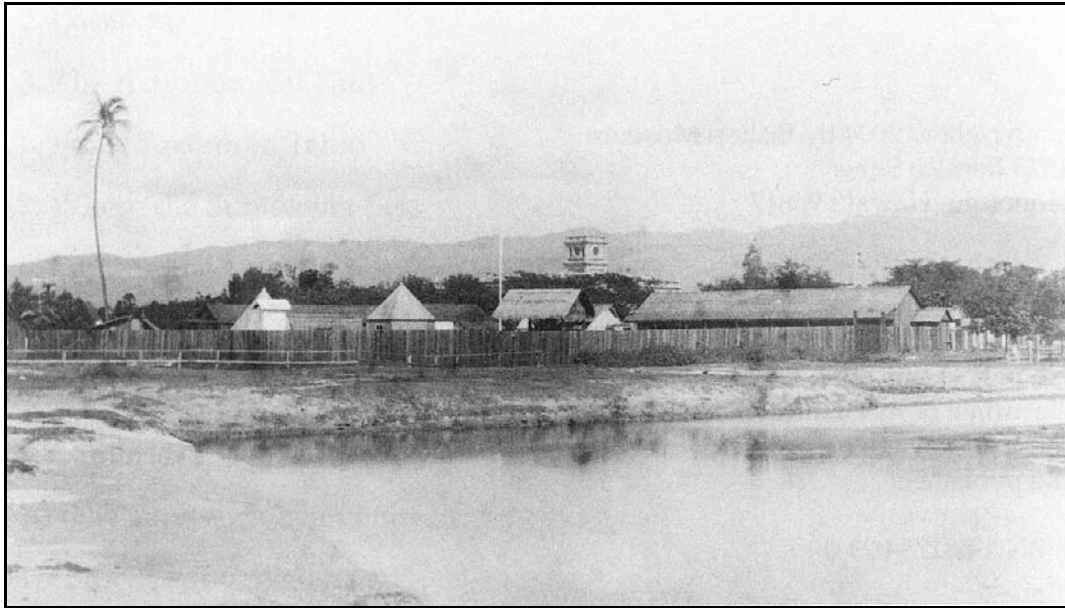


Figure 48. 1874 photograph of Transit of Venus station at 'Āpua near Honolulu, view to north (Bishop Museum Archives, reprinted in Chauvin 2004:iii). Note the pond (part of 'Auwaiolimu) in the foreground, the long barracks/workshops and other buildings of the station in the mid-ground, and the spire of Kawaiaha'o Church in the background

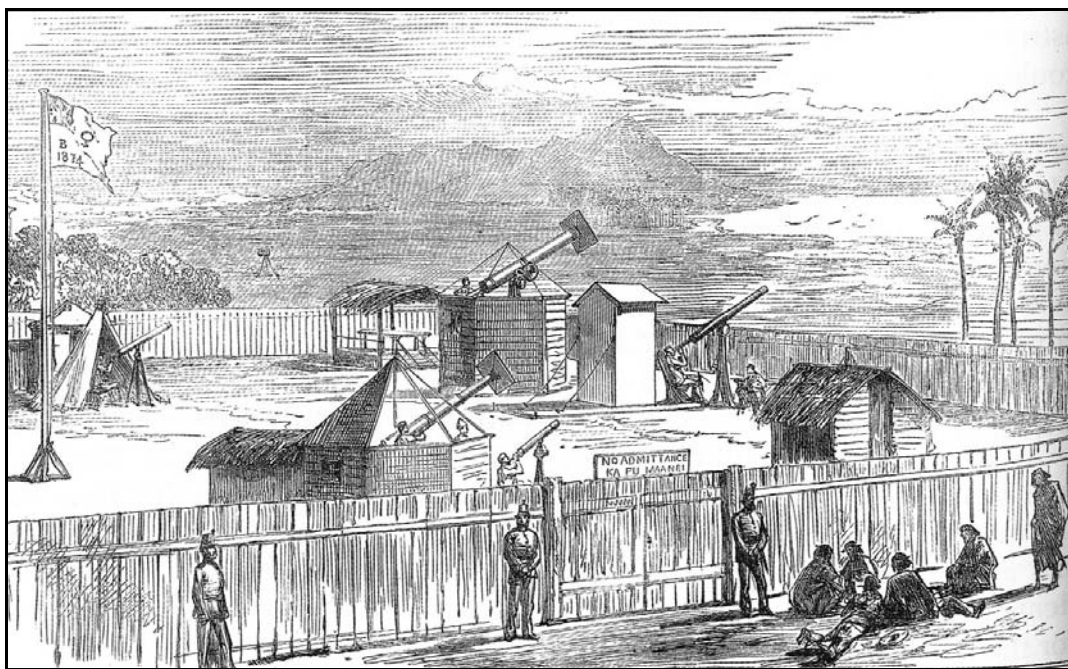


Figure 49. Sketch of the Transit of Venus station at 'Āpua near Honolulu, view to east (sketch from *Illustrated London News*, January 23, 1875; reprinted in Chauvin 2004:108). Note armed guards keeping curious onlookers outside the fenced enclosure

by the king and other prominent families of Hawai'i. All that was left was to dismantle the temporary buildings at 'Āpua. Tupman wrote:

Mar. 13. The sale. Our household goods sold well, many friends desiring to obtain a memento of our visit. The long shed, Cook house, walls of huts, transit hut complete, water pipes & taps, 6-foot fencing and a large pile of lumber were knocked down to His Majesty the King for a very small sum, as no one would bid against him. We were not altogether sorry for this as His Majesty has given us the land rent free & had aided us in many ways tending to save expense to the British Government [cited in Chauvin 2004:124].

3.4.3.2 Salt Production in Kaka'ako

As noted in the Land Commission Award testimony, a large portion of Kaka'ako was used to produce salt. The Hawaiians used *pa'akai* (salt) for a variety of purposes: to flavor food, to preserve fish by salting, for medicines, and for ceremonial purposes.

In 1903, Nathaniel Emerson translated David Malo's articles on early Hawaiian life. The following is Emerson's translation of David Malo's description of the traditional method of making salt:

Salt was one of the necessities and was a condiment used with fish and meat, also as a relish with fresh food. Salt was manufactured in certain places. The women brought sea-water in calabashes, or conducted it in ditches to natural holes, hollows and shallow ponds (*kekaha*) on the sea-coast, where it soon became strong brine from evaporation. Thence it was transferred to another hollow or shallow vat, where crystallization into salt was completed [Malo 1951:123].

Captain Cook was the first to note the method of making salt in prepared "salt pans:"

Amongst their arts, we must not forget that of making salt, with which we were amply supplied, during our stay at these islands, and which was perfectly good of its kind. Their salt pans are made of earth, lined with clay; being generally six or eight feet square, and about eight inches deep. They are raised upon a bank of stones near the high-water mark, from whence the salt water is conducted to the foot of them, in small trenches, out of which they are filled, and the sun quickly performs the necessary process of evaporation... Besides the quantity we used in salting pork, we filled all our empty casks, amounting to sixteen puncheons, in the Resolution only [Cook 1784:151].

In the next years after the first sightings of the Hawaiian Islands by Captain Cook in 1778, most visitors to the islands were British and American fur traders who stopped at Hawai'i on their way to China. One reason for their visit was to stock up on food and water, but another concern was to buy or trade for salt, which was used to cure the seal and mammal pelts collected from the Northwest Coast. During Kotzebue's visit in 1816 and 1817, he noted that "Salt and sandalwood were the chief items of export" (in Thrum 1905:50).

The journals of none mention the object of call other than for refreshments, though one, 3 some years later, records the scarcity and high price of salt at the several points touched at, with which to serve them in the curing of furs obtained

on the coast. In all probability salt was the first article of export trade of the islands and an object, if not the object, of these pioneer fur-traders' call [Thrum 1905:45].

The missionary William Ellis, on a tour of the Hawaiian Islands in 1822 and 1823, also noted these salt pans and recorded the final step of crystallization:

The natives of this district (Kawaihae) manufacture large quantities of salt, by evaporating the sea water. We saw a number of their pans, in the disposition of which they display great ingenuity. They have generally one large pond near the sea, into which the water flows by a channel cut through the rocks, or is carried thither by the natives in large calabashes. After remaining there for some time, it is conducted into a number of smaller pans about six or eight inches in depth, which are made with great care, and frequently lined with large evergreen leaves, in order to prevent absorption. Along the narrow banks or partitions between the different pans, we saw a number of large evergreen leaves placed. They were tied up at each end, so as to resemble a narrow dish, and filled with sea water, in which the crystals of salt were abundant [Ellis 1827:403-404].

In an article on Hawaiian salt works, Thomas Thrum (1924) discusses a salt works in Kaka'ako:

Honolulu had another salt-making section in early days, known as the Kakaako salt works, the property of Kamehameha IV, but leased to and conducted by E.O. Hall, and subsequently E.O. Hall & Son, until comparatively recent years. This enterprise was carried on very much after the ancient method of earth salt pans as described by Cook and Ellis [Thrum 1924:116].

An 1883 map of the Honolulu Water Works System shows the extent of salt production within the Kaka'ako area (Figure 50). The area of salt pans is marked out as a large grid of contiguous squares located within the Kaka'ako Station portion of the study area.

A 1838 sketch of "Honolulu Salt Pan, near Kaka'ako" drawn by French visitor Auguste Borget and a 1845 sketch of "Native Church, Oahu, from the Old Salt Pans," drawn by John B. Dale, from the U.S. Exploring Expedition led by Lt. Charles Wilkes show the traditional, long salt ponds constructed parallel to the shore in Kaka'ako (Figure 51 and Figure 52).

The traditional method of salt production was gradually replaced by the more labor-intensive Chinese method, as the Chinese immigrants began to take over the traditional salt and fish ponds of Honolulu in order to grow rice, to raise ducks, and to make salt.

In a 1906 article, Rev. Westervelt (1906:43-46) explained the Chinese method of salt evaporation for the Honolulu salt beds. The Chinese worker first used a water pump to draw the seawater from the larger ditch below to the salt-evaporation beds above. The man moved the two handles back and forth to work the pump. The evaporation beds were lined with clay, wet with sea water, and tramped and pounded down. Each pan was about 20 feet square, covered with about two inches of water, and bound by an earth dyke as shown in a 1902 photograph of the Kewalo salt brine beds (Figure 53). After allowing the sun to evaporate some of the water, the worker stepped into the evaporation pan and scraped the salt into a pile in the center with a simple wooden scraper. The worker then threw a large basket-shaped scoop into the brine and

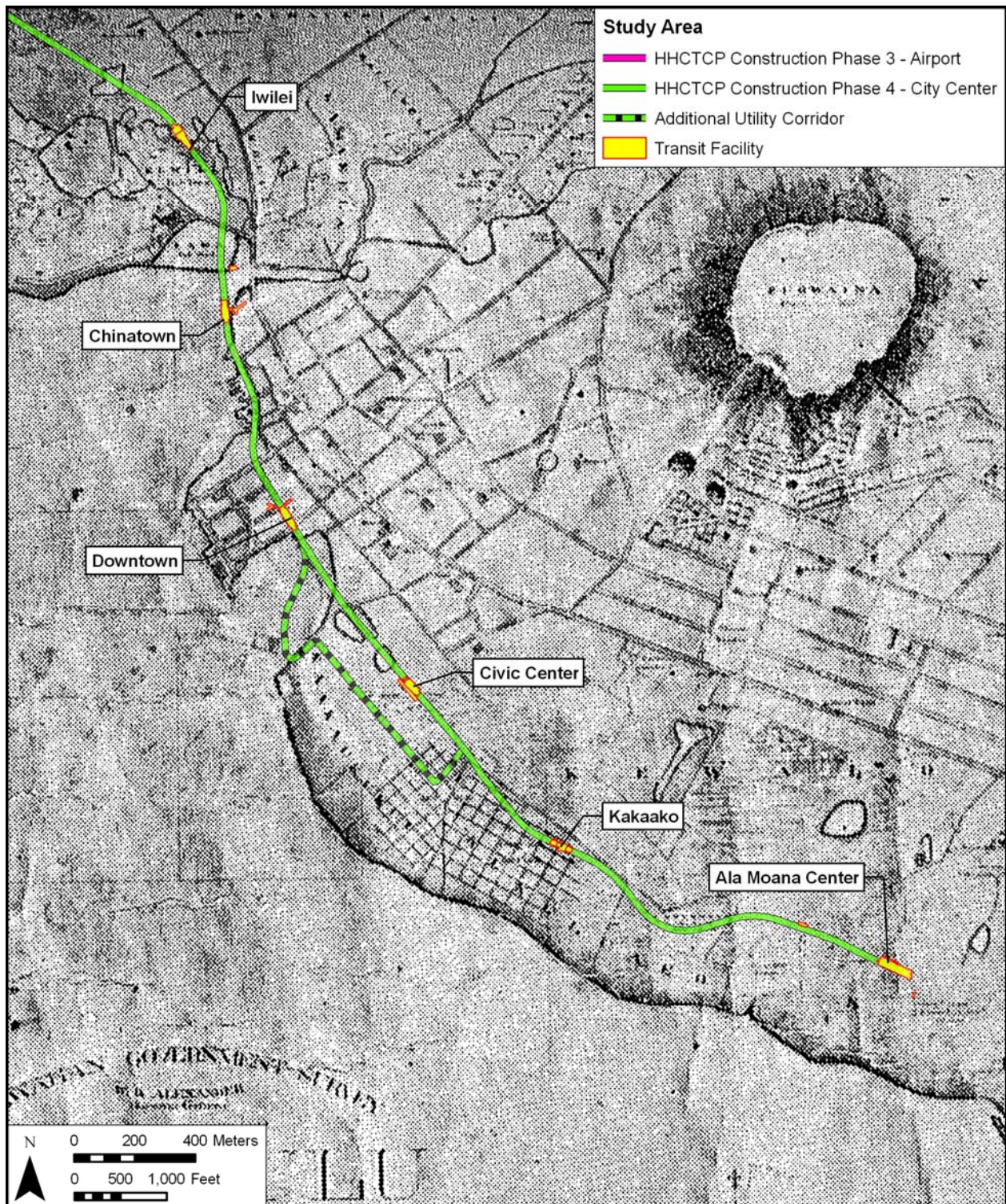


Figure 50. 1883 map of the Honolulu Water Works System (Reg. Map 1087). Note the grid system within the Kaka'ako Station portion of the study area, which represent salt pans

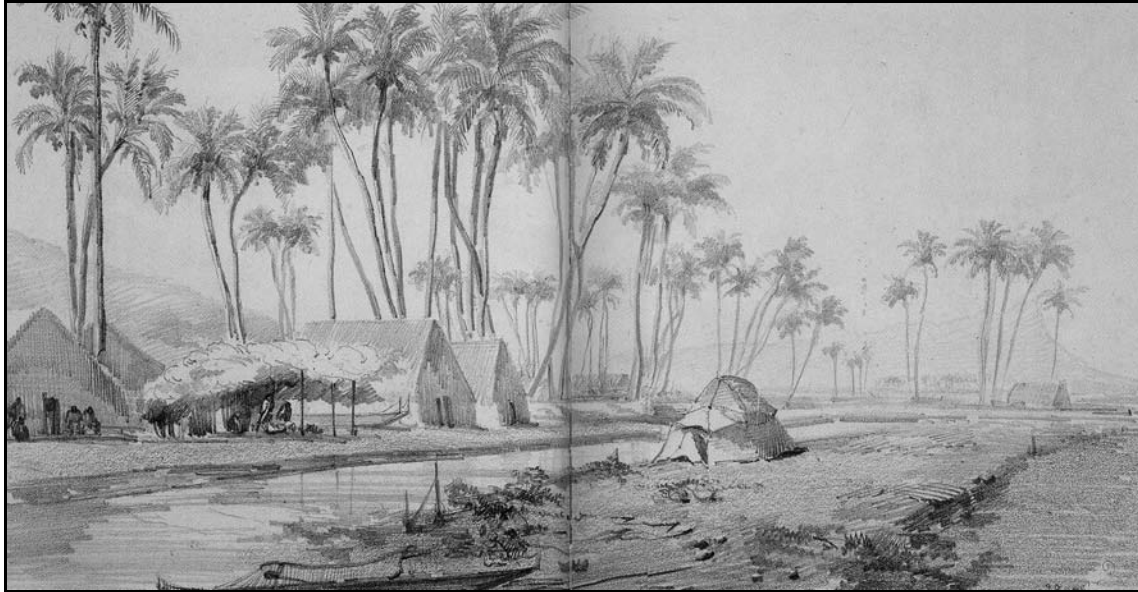


Figure 51. 1838 sketch of “Honolulu Salt Pan, near Kaka‘ako” drawn by French visitor Auguste Borget (original sketch at Peabody Essex Museum, Salem, Mass; reprinted in Grant 2000:64-65)

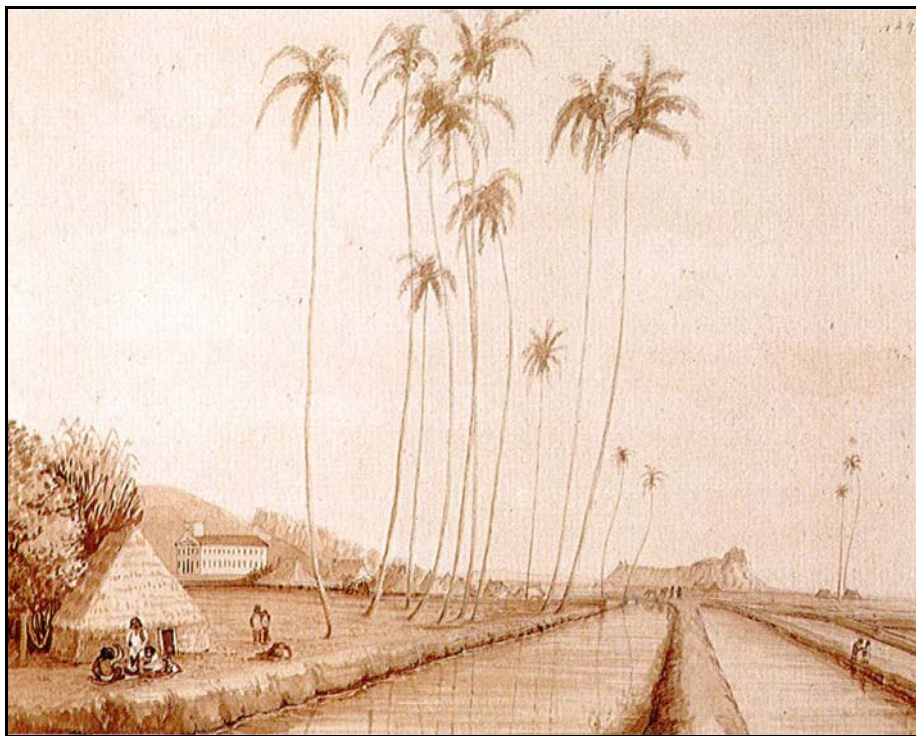


Figure 52. 1845 sketch of “Native Church [Kawaiaha‘o Church], Oahu, from the Old Salt Pans,” drawn by John B. Dale, from the U.S. Exploring Expedition led by Lt. Charles Wilkes (J. Welles Henderson Collection, reprinted in *Forbes* 1992:126). Note: the sketch is probably from the salt pans in the Ka‘ākaukukui area

used a tin dipper to move the salt to the basket. Two baskets, one on each side of a pole, were then carried on the back of a worker across the thin earth dykes between the salt pans. The baskets were dumped into large drying piles where the remaining water seeped out into the ground. The salt was then sewn into gunny sacks and sent to the market for sale.

By 1901, most of the fishponds and salt pans *makai* of King Street were reported as abandoned. In that year, the Hawai'i Legislature (1901:185) proposed to build a ditch to drain away the "foul and filthy water that overflows that district at the present time."

The export of salt declined in the late 19th century. Thrum (1924:116) states that the apex of the trade was in 1870, but by 1883 he noted that "pulu, salt and oil have disappeared entirely" from the list of yearly exports (Thrum 1884:68). By 1916, only one salt works, the Honolulu Salt Co., was still in operation.

3.4.3.3 Human Quarantine and Cemeteries

The city block now bounded by Punchbowl Street, Pohukaina Street, South Street, and Ala Moana Boulevard (now covered by the Waterfront Plaza complex), approximately 150 m southwest of the current study area, was used as a cemetery from the 1700s (or earlier) up to the early 1800s. This is based on an analysis of artifacts from eight burials disinterred at the site (Griffin et al. 1987:4). The burial ground is currently referred to as the "Ka'ākaukukui Cemetery," but its ancient name, if it had one, is unknown.

During the 1853 smallpox epidemic, patients were isolated at a temporary quarantine camp and hospital at Kaka'ako (Thrum 1897:98). Victims of the disease were later buried at the Honuakaha Cemetery near the modern junction of Quinn Lane and South Street, located approximately 30 m northeast of the current study area (Griffin et al. 1987:13; Pfeffer et al. 1993; Hammatt and Pfeffer 1993), and discussed further in the previous archaeological research section, below.

Hansen's Disease (i.e., leprosy) was first reported in Hawai'i 1840, and positively identified in 1853. During the next 25 years (i.e., 1853-1878), there were approximately 160 cases per year, and 80 cases per year over the next 50 years (i.e., 1878-1928). The number of cases later decreased to 60 in 1931 and 20 in 1951 (Arnold 1956:317). In 1865, a receiving hospital in Kalihi, west of Honolulu, was set up to examine suspected lepers. If the diagnosis was confirmed, the patients were forcibly exiled to the Kalaupapa colony on Moloka'i. In cases where it was uncertain if the patient had leprosy or some other type of skin disease, the stay at the hospital could extend into weeks while the doctors waited for definite symptoms of leprosy to develop. A branch hospital and receiving station for cases of Hansen's Disease was opened in 1881 at Kaka'ako, within the city block now bound by Ala Moana Boulevard, Keawe Street, Auahi Street, and Coral Street (Griffin et al. 1987:55) with 48 patients tended by Dr. George L. Fitch (Hanley and Bushnell 1980:112). This land, at "Fisherman's Point," was donated by Princess Ruth Ke'elikōlani. The "Leper Hospital" is indicated on the 1884 map of Honolulu (Figure 54).

One of the main purposes of the Kaka'ako Detention Center was to keep suspected lepers isolated from the general public. Sister Leopoldina, a Franciscan sister, described the Kaka'ako Hospital in 1885 as being like a prison, enclosed by:



Figure 53. 1902 photograph of Kewalo brine basins (original photograph at Bernice P. Bishop Museum; reprinted in Scott 1968:579)

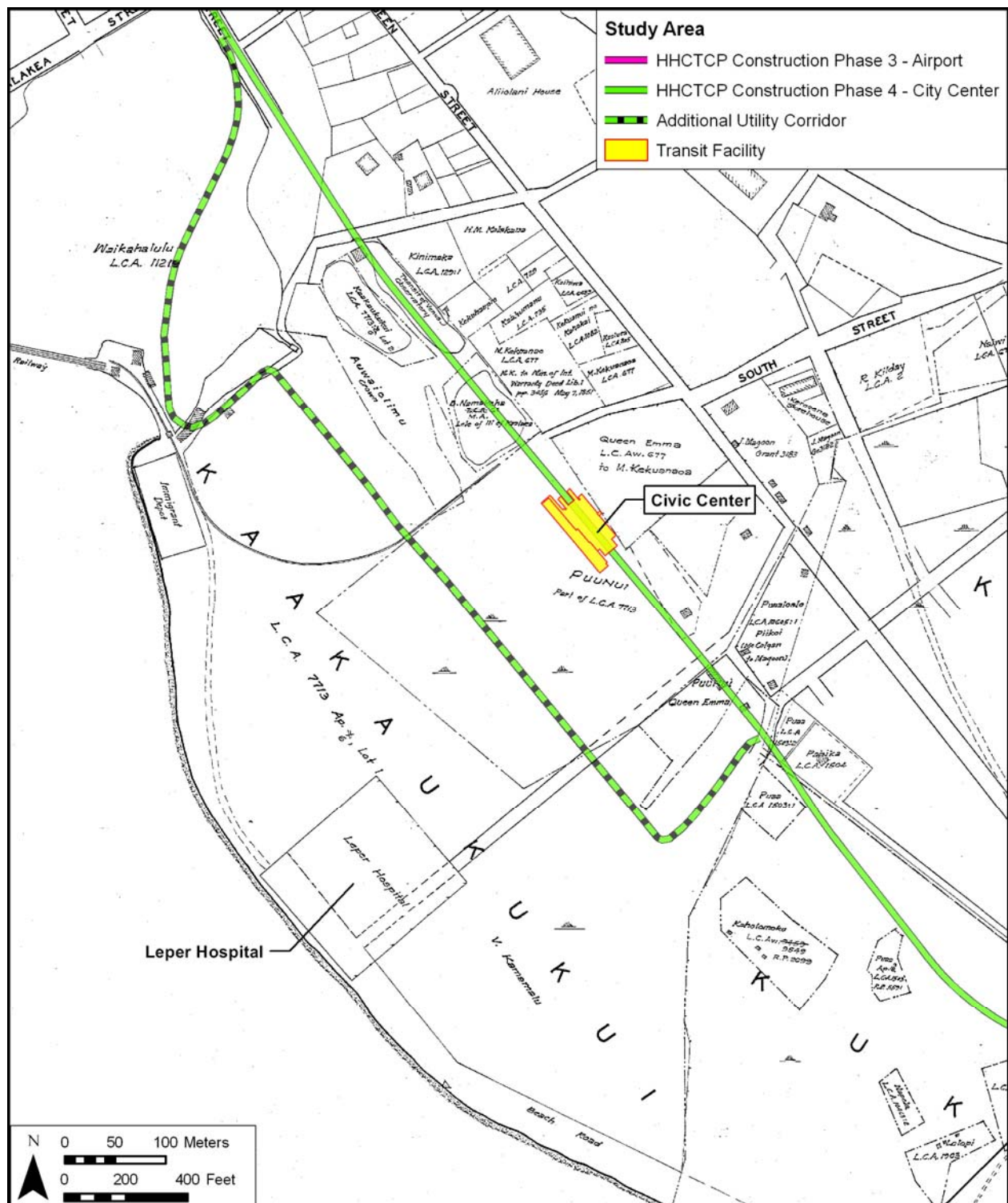


Figure 54. 1884 map of Honolulu, Kewalo section, by S. E. Bishop (R. M. 1090), showing the location of the Leper Hospital site in relation to the study area

... a high close board fence and large strong locked gates... A large building [sat] over those gates where the lepers were allowed to talk with their relatives through prison bars. No one was allowed to enter without a permit from the Board of Health [cited in Hanley and Bushnell 1980:114].

In 1888, the Board of Health decided to close the Kaka'ako Branch, moving the receiving station to Kalihi. They determined that "the buildings at Kakaako should be entirely removed" (Hanley and Bushnell 1980:275). The hospital and several of the larger buildings were dismantled and transported for use at Moloka'i (Daws 1984:xxiii). A few buildings remained and the Kaka'ako site continued to be used as a temporary leprosy receiving station. Thrum (1897:101) reports that victims of the cholera epidemic of 1895 were treated at the Kaka'ako Hospital, indicating the remaining buildings were modified or a new hospital was built during this time.

In 1899, the first case of bubonic plague was identified in Hawai'i; the plague spread rapidly through the crowded tenements of Chinatown. The government decided that the best way to eradicate the disease was through "controlled burning" of the wooden buildings. Infected patients were moved to a quarantine camp at Kaka'ako. Some people whose houses were burned, not necessarily patients, were housed at the barracks of the Kaka'ako Rifle Range, and their belongings were stored in the cellars of Kaumakapili Church.

3.4.3.4 Pohukaina School and Mother Waldron Park

In the surveyor's notes for an 1873 map of land parcels at the corner of King and Punchbowl Streets, the present site of the Hawai'i State Public Library, one of the parcels is identified as the "lot purchased by the Government of Prince Lunalilo in 1872, said portion now to be transferred to the control of the Board of Education." The parcel was, in 1874, to become the site of the Pohukaina School for Girls, one of three government-supported schools on O'ahu during the second half of the nineteenth century.

In 1907, the Hawai'i Territorial Legislature passed an act to establish the Library of Hawai'i. After evaluating several possible locations, the government committee decided that the King Street lot of the Pohukaina School would be the best location. Gov. Frear wrote, "I arranged to have Pohukaina School moved to Kakaako- a more central location with reference to its constituency and with much more space for buildings and playgrounds" (Frear 1938, cited in Schilz 1991).

As Gov. Frear noted, Pohukaina School was moved to Kaka'ako within the city block bounded by Pohukaina Street, Keawe Street, Halekauwila Street, and Coral Street, an area adjacent to the *makai* edge of the current study area and just southeast of the Civic Center Station.

Constructed at a cost of \$28,000, the new school building opened in 1913:

The structure which was designed by E. C. Petit of the architectural firm headed by H.L. Kerr represents a special study in fire-proofing. It is fitted with specially designed fire walls and doors, with outside staircases.

The building is of reinforced concrete and economically planned, the rooms on the second floor being fitted with folding doors so that they may be thrown

together. The design permits of the addition of a number of rooms at the rear of the building when an increase in school population makes this necessary [Pacific Commercial Advertiser; June 22, 1913:A1].

Pohukaina School remained in operation in Kaka'ako until 1980, by which time it had developed into a special education facility. The buildings were demolished and, in 1981, the Pohukaina School special education program was transferred to the campus of Kaimukī Intermediate School.

One of the teachers at the Pohukaina School was Margaret Waldron. Mrs. Waldron taught at Pohukaina School for 18 years until her retirement in 1934. She was also noted for her volunteer work in Kaka'ako, and was "generally credited with being the individual who had the most influence in transforming the so-called 'Kakaako gangs' into law abiding groups and wiping out the unsavory reputation which at one time clung to the district" (*Honolulu Star-Bulletin*; May 8, 1936:A1). Mrs. Waldron died on May 8, 1936. The following year, when a new playground was constructed across Coral Street from Pohukaina School, the Honolulu Board of Supervisors authorized the park's designation as "Mother Waldron Playground." At the September 20, 1937 opening of the playground, designed by Harry Sims Bent and constructed on the site of the former County stables at a cost of \$50,000:

...officials expressed the hope that the park would be appreciated and enjoyed to the utmost. Reference was made to the dusty roads and barren lands that had marked the site not many years ago [*Honolulu Advertiser*; September 21, 1937:A1].

Mother Waldron Playground was then, in 1937, the most modern facility in the Territory. The following year, Lewis Mumford, the noted author and social scientist, was invited by the Honolulu Park Board to study the county's parks and playgrounds. He noted the "spirit called forth in the Mother Waldron Playground." Mumford defined that spirit exemplified by Mother Waldron Playground and other county parks:

That the very spirit of play is enhanced by taking place in a setting that shows order and vision often does not occur to the municipal departments concerned; hence, ugly chicken-wire fences, clay or bare asphalt surfaces, and a complete innocence of all aesthetic device. Honolulu has made a valuable departure from this stale tradition by providing, in some of its new playgrounds, structures that have none of this tawdry makeshift quality; they are rather examples of building art worthy to have a place beside the open-air gymnasiums or palestra of the Greeks. The handsome bounding wall, the judicious planting of shade trees, the retention of grass wherever possible, translate the spirit of organized play to the area itself [Mumford 1938:42].

3.4.4 Early 20th-Century Land Reclamation Projects

3.4.4.1 Kaka'ako Reclamation

By the 1880s, infilling of the mud flats, marshes, and salt ponds in the Kaka'ako area had begun. This infilling was driven by three separate, but overlapping, improvement justifications. The first directive was for the construction of new roads and improving older roads by raising the

grade so the improvements would not be washed away by flooding during heavy rains. A report by the Hawaii Board of Health (1905:80) noted:

I beg to call attention to the built-up section of Kewalo, “Kaka‘ako,” where extensive street improvements, filling and grading have been done. This, no doubt, is greatly appreciated and desirable to the property owners of that locality, but from a sanitary point of view is dangerous, inasmuch as no provision has been made to drain the improved section, on which have been erected neat cottages occupied for the greater part by Hawaiian and Portuguese families, now being from one to three feet below the street surface, and which will be entirely flooded during the rainy season. Unless this is remedied this locality will be susceptible to an outbreak [of cholera] such as we experienced in the past.

As mentioned in the above section, the justification for infilling of low-lying areas most frequently cited was public health and sanitation: the desire to clean up rivers and ponds that were reservoirs for diseases such as cholera and were breeding places for rats and mosquitoes. Thus, as early as 1902 (Hawaii Board of Health 1903:80), it is reported that:

The Board has paid a great deal of attention to low-lying stagnant ponds in different parts of the city, and has condemned a number of them. The Superintendent of Public Works has given great assistance to seeing that the ponds condemned by the Board are filled. In September a pond on South Street was condemned as deleterious to the public health.

The first areas to be filled were those closest to Honolulu, then moving outward to Kaka‘ako (Griffin et al. 1987:13). The first fill material may have been set down in 1881 for the Kaka‘ako Leper Branch Hospital, which had been built on a salt marsh. Laborers were hired to “haul in wagonloads of rubble and earth to fill up that end of the marsh” (Hanley and Bushnell 1980:113). In 1903, five more lots in Kewalo, on Ilaniwai, Queen, and Cooke Streets, were condemned and ordered to be filled (Hawaii Board of Health 1903:6).

Although public health and safety were prominently cited, according to Nakamura (1979), the main desire (and third justification) to infill Honolulu, Kewalo, and then Waikīkī lands was to provide more room for residential subdivisions, industrial areas, and finally tourist resorts. In the early part of the 20th century, Kaka‘ako was becoming a prime spot for large industrial complexes, such as iron works, lumber yards, and draying companies, which needed large spaces for their stables, feed lots, and wagon sheds.

In 1900, the Honolulu Iron Works, which produced most of the large equipment for the Hawaiian plantation sugar mills, moved from its old location at Queen and Merchant Streets near Downtown Honolulu to the shore at Kaka‘ako on land that had been filled from dredged material during the deepening of Honolulu Harbor (Thrum 1901:172). Other businesses soon followed. Thrum (1902:168) noted:

The Union Feed Co. is another concern whose business has outgrown the limits of its old location, corner of Queen and Edinburgh streets. Like the Iron Works Co. they have secured spacious premises at Kakaako, erecting buildings specially adapted to the needs of their extensive business at the corner of Ala Moana (Ocean Road) and South Street.

Private enterprises were not the only new occupants of Kaka'ako. A sewer pumping station, an immigrant station, and a garbage incinerator were also built on "reclaimed land." Thrum (1907:148-149) noted:

The dredging of Honolulu harbor and its channel is completed as far as planned for the present...the material there from being used to fill in a large area of Kakaako and the flats in the vicinity of the sewer pumping station and garbage crematory.

In 1905, the Kaka'ako area was being used for the incineration of waste from urban Honolulu. Thomas Thrum reported:

Early in the year was completed the long projected garbage crematory for the disposal, daily, of the city's refuse by a patent and sanitary process. It is located on the shore of Kakaako, adjoining the sewer pumping station; is two stories in height and built of brick [Thrum 1906:177].

3.4.4.2 Kewalo Reclamation Project

Although the Board of Health could condemn a property and the Department of Public Works could then fill in the land, the process was rather arbitrary and piecemeal. In 1910, after an epidemic of bubonic plague, the Board of Health condemned a large section of Kewalo, consisting of 140 land parcels with numerous ponds (Hawai'i Department of Public Works 1914:196).

In 1914, the entire:

. . . locality bounded by King street, Ward avenue, Ala Moana and South street, comprising a total area of about two hundred acres, had been found by the board of health of the Territory to be deleterious to the public health in consequence of being low and below 'the established grades of the street nearest thereto' and at times covered or partly covered by water and improperly drained and incapable by reasonable expenditure of effectual drainage, and that said lands were in an insanitary and dangerous condition [Hawaii Supreme Court 1915:329].

The superintendent of the Board of Health then sent a letter to all property owners informing them that they must fill in the lands to the grade of the street level within 60 days. Only a few of the land owners complied, infilling their land with a variety of materials. Most of the land owners did not comply with the notice and, in 1912, the bid was given to Lord-Young Engineering Co. to fill in the land with "sand, coral and material dredged from the harbor or reef and the depositing of the same upon the land by the hydraulic method" (Hawaii Supreme Court 1915:331). The affected land owners sued to stop the work, and in the suit the method of hydraulic filling is described:

By this [hydraulic] method the material dredged is carried in suspension or by the influence of water which is forced through large pipes and laid upon the lands and intervening streets, and afterwards is distributed and leveled, the water having drained off through ditches provided for the purpose. The work is done in large sections around which bulkheads have been constructed. A section can be filled in about thirty days, the dredger working about fifteen hours per day. And in about

two months after a section has been filled the ground will have dried out so as to be fit for use as before. . . The character of the material varies from very fine sand to coarse bits of coral. . .

It appears in evidence that though the method employed the finest of the material which is carried upon the land settles when the water which transports it becomes quiet and as the water runs off a sludge or mud remains which forms a strata more or less impervious to water. This strata, however, is covered by the coarser and more porous material. . . it appears that by mixing in to a depth of a few inches ordinary soil small plants will grow without difficulty. . . The character of the locality must be considered. It is not adapted to agriculture, but is suited more particularly to such business purposes as it now partly used for, such as stables, laundries, warehouses, mills, etc., and for cottages with small yards for the accommodation of laborers engaged in connection therewith. Upon the whole, we are of the opinion that the material proposed to be used in the fill-in of the lands of the complainants is not of a character as should be held to be improper for any of the reasons urged [Hawaii Supreme Court 1914:351].

The expense of the suit did manage to shut down operations planned for the area from Ward Avenue to Waikīkī (Thrum 1916:159-160). This land was mainly owned by the Bishop Estate, which leased the land to small farmers growing taro and rice and raising ducks in the ponds. In 1916, the Bishop Estate announced that as soon as their present tenant leases expired, it planned to fill the lands and divide them into residence and business lots (Larrison 1917:148-149).

3.4.5 Urban Expansion in the Kaka‘ako Area

Kaka‘ako was considered outside the Honolulu town boundary and was used in the mid-to-late 19th century as a place for cemeteries, burial grounds, and for the quarantine of contagious patients. Then, in the beginning of the 20th century, the area was used as a place for sewage treatment and garbage burning, finally becoming an area for cheap housing and commercial industries (Griffin et al. 1987:13).

Late 19th-century maps (Figure 55 and Figure 56) show the emerging traces of the future development in Kaka‘ako as the grid of roads extending southeast from Honolulu toward Waikiki. Queen Street, which was planned to connect to the beach road near Waikīkī, appears to follow the route of the traditional trail from Kou (Honolulu) to Waikīkī, as described by John Papa ‘Ī‘ī. This trail likely traversed a sand berm raised above the surrounding marshlands and coral flats. The late 19th-century maps indicate the vicinity of the current study area remained marshland with fishponds and salt ponds with a few scattered habitations.

A series of U. S. Geological Survey (or wartime U.S. Army) topographic maps (Figure 57 to Figure 60) shows the gradual expansion of the Honolulu urban district to the edge of Kaka‘ako and beyond in the early 20th century. During the first half of the 20th century, both rice fields and marshlands were eliminated as Kaka‘ako lands were filled to accommodate the expanding urbanization of Honolulu.

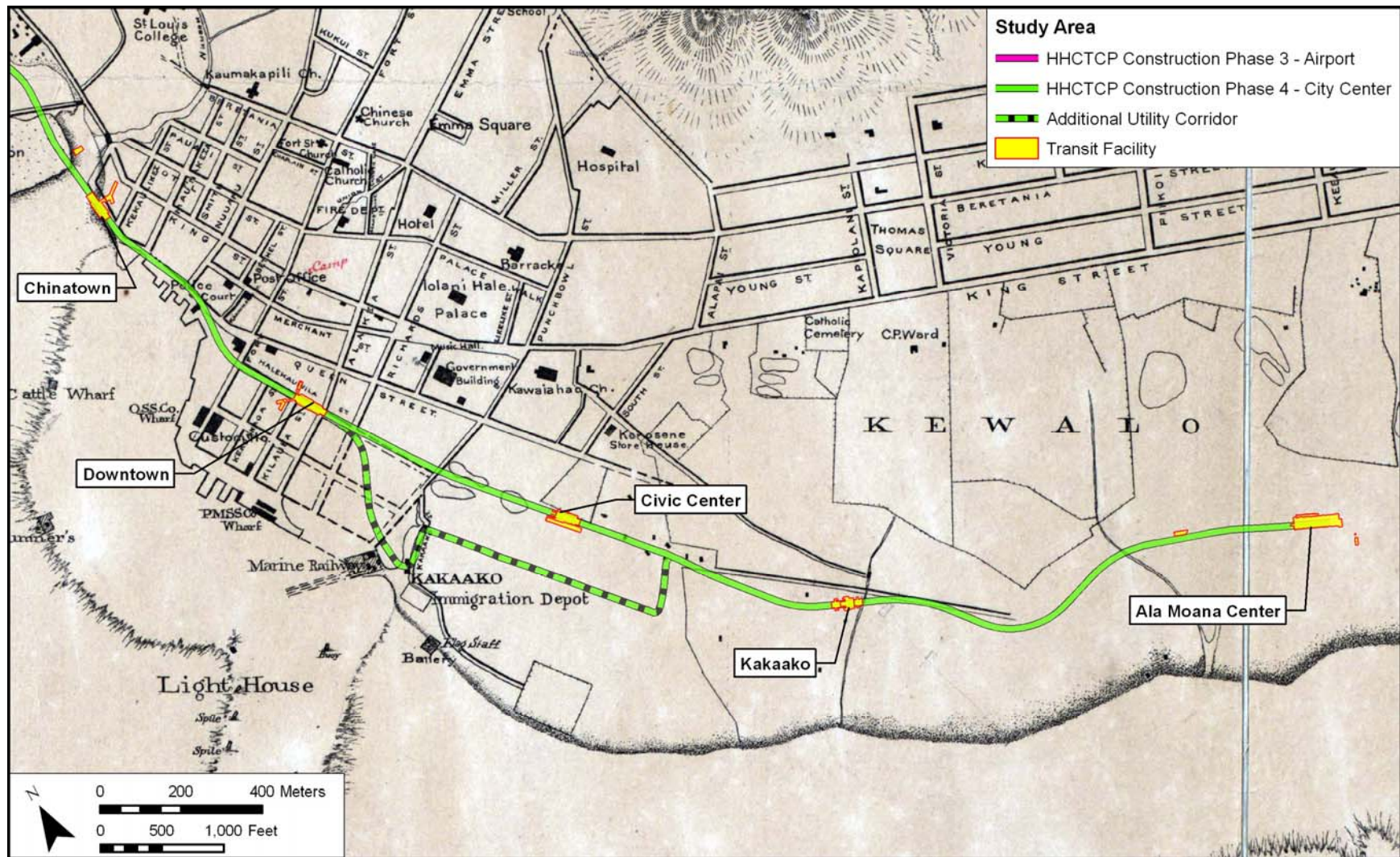


Figure 55. 1887 Hawaiian Government Survey Map of Honolulu and Vicinity, by W.A. Wall (source: Library of Congress), showing the location of the Kaka'ako portion of the study area

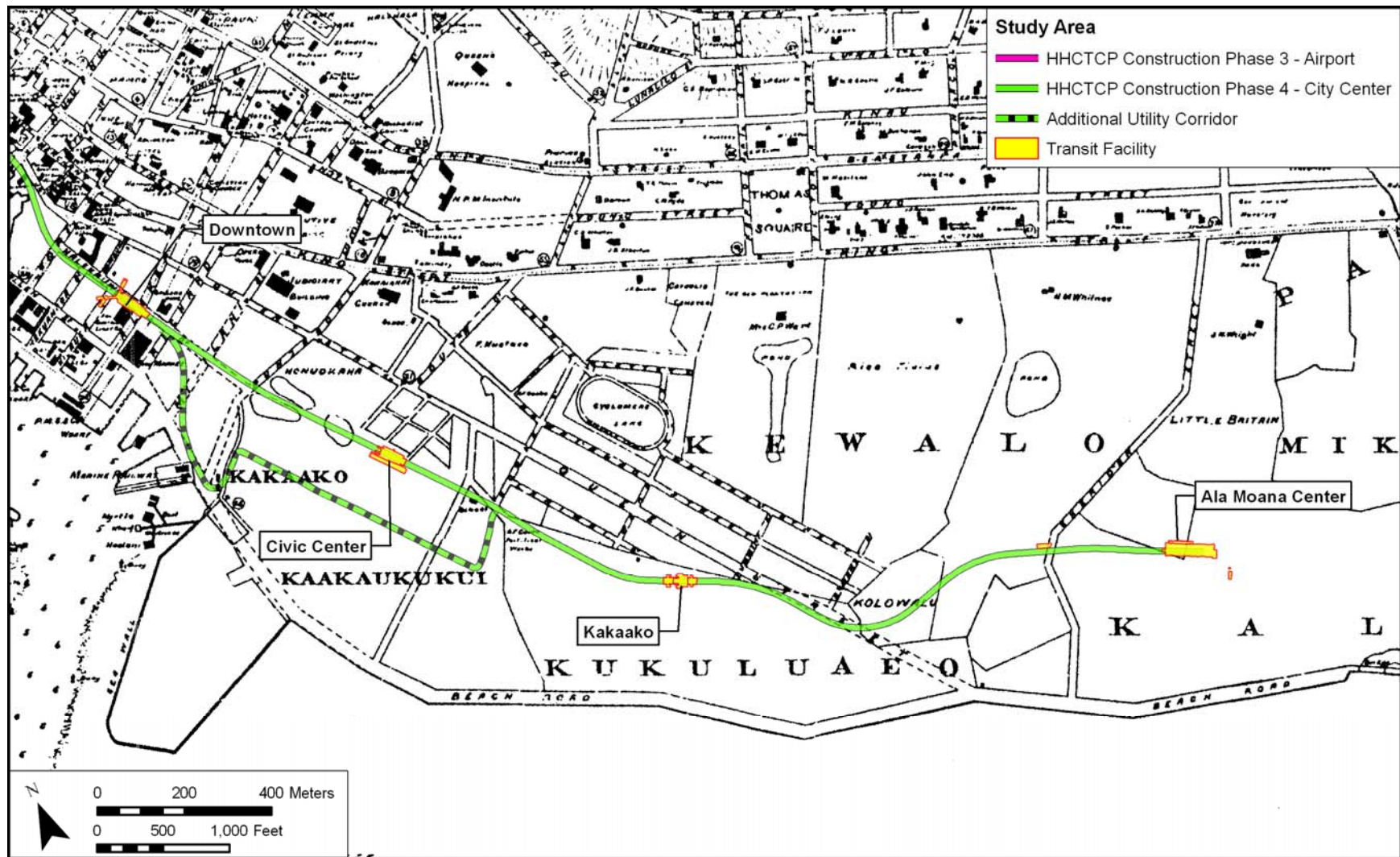


Figure 56. 1897 Map of Honolulu by M. D. Monsarrat (Reg. Map 1910), showing the location of the Kaka'ako portion of the study area

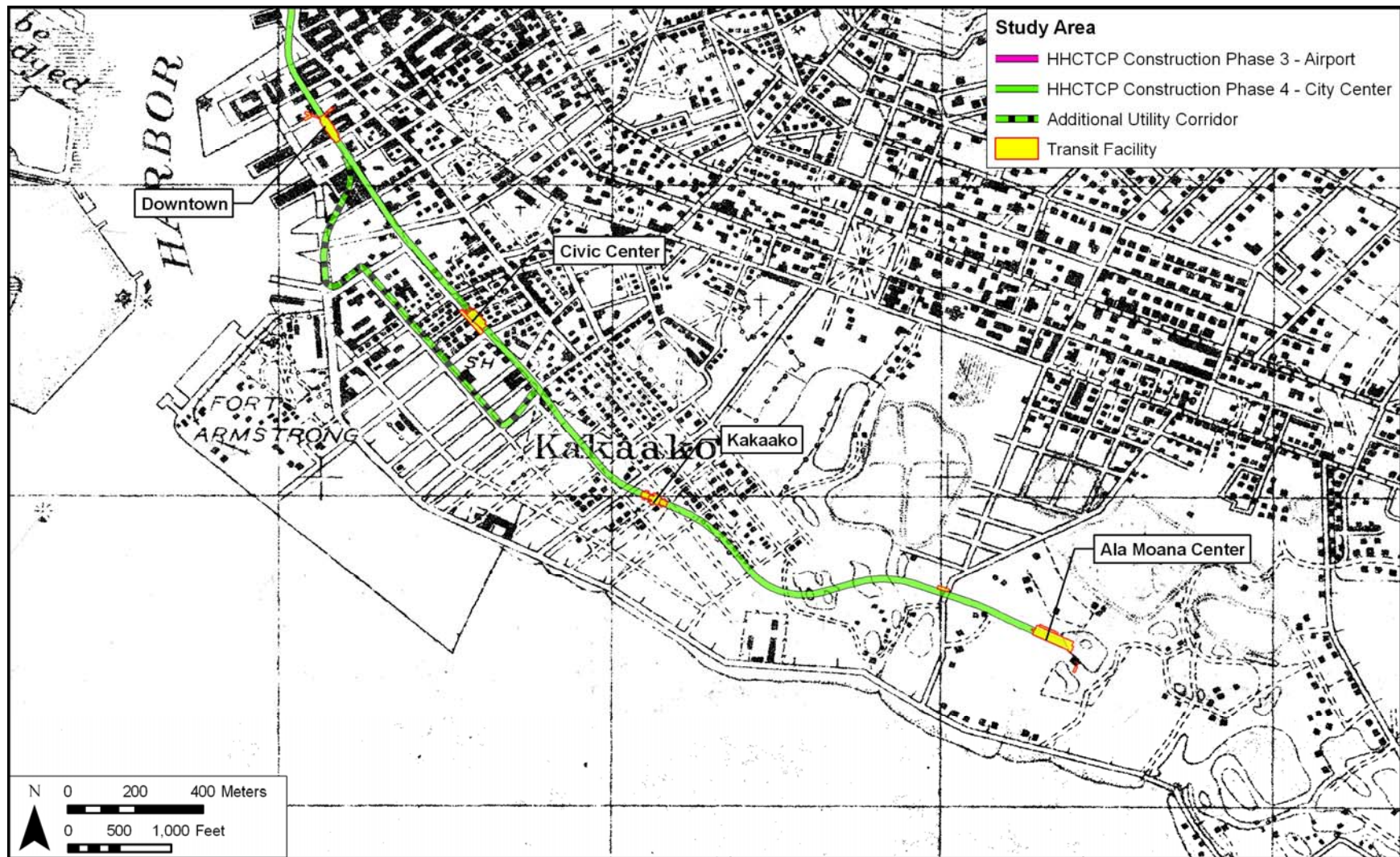


Figure 57. 1919 War Department topographic map, Honolulu Quadrangle, showing the Kaka'ako portion of the study area

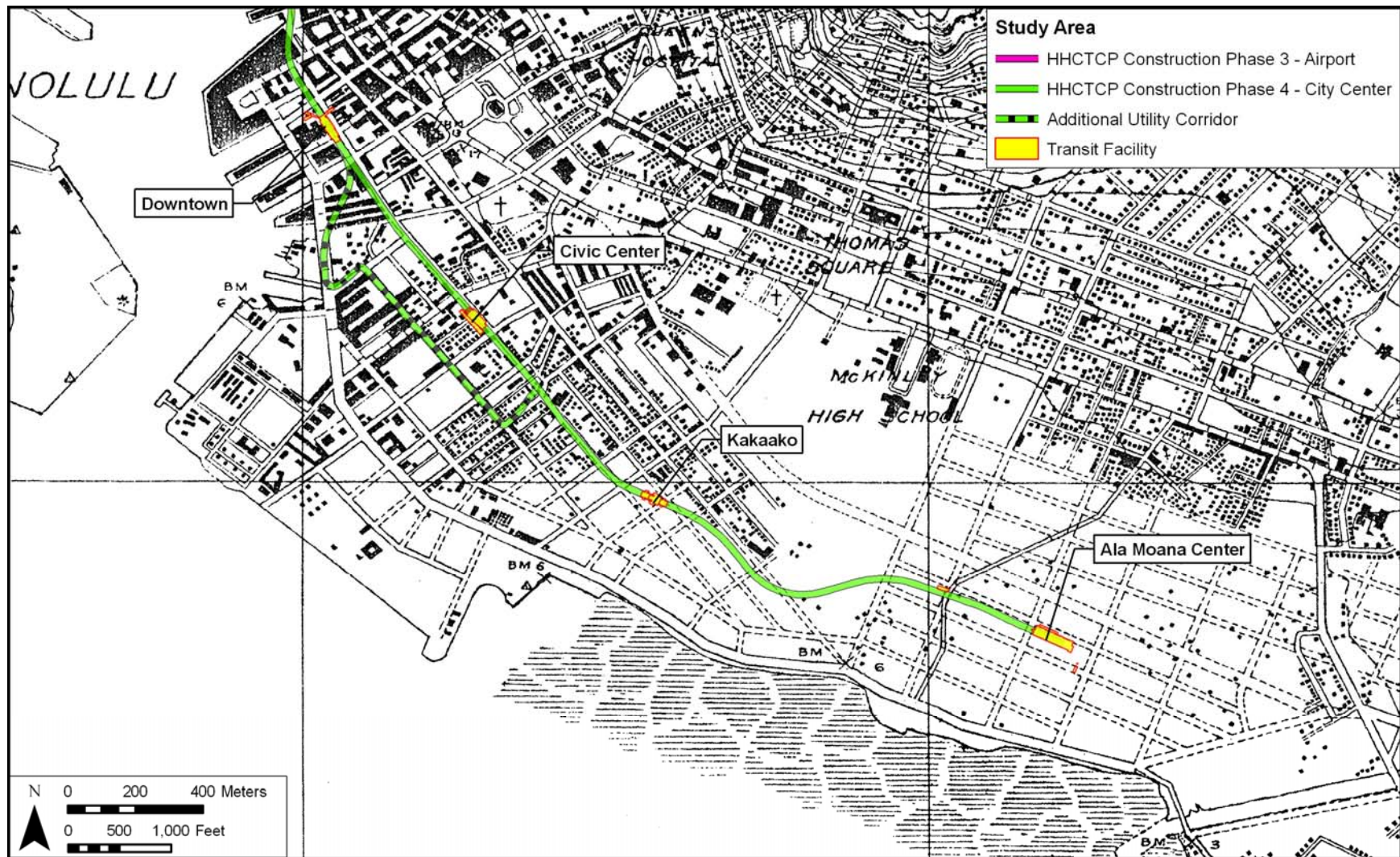


Figure 58. 1927-28 U.S. Geological Survey topographic map, Honolulu Quadrangle, showing the Kaka'ako portion of the study area

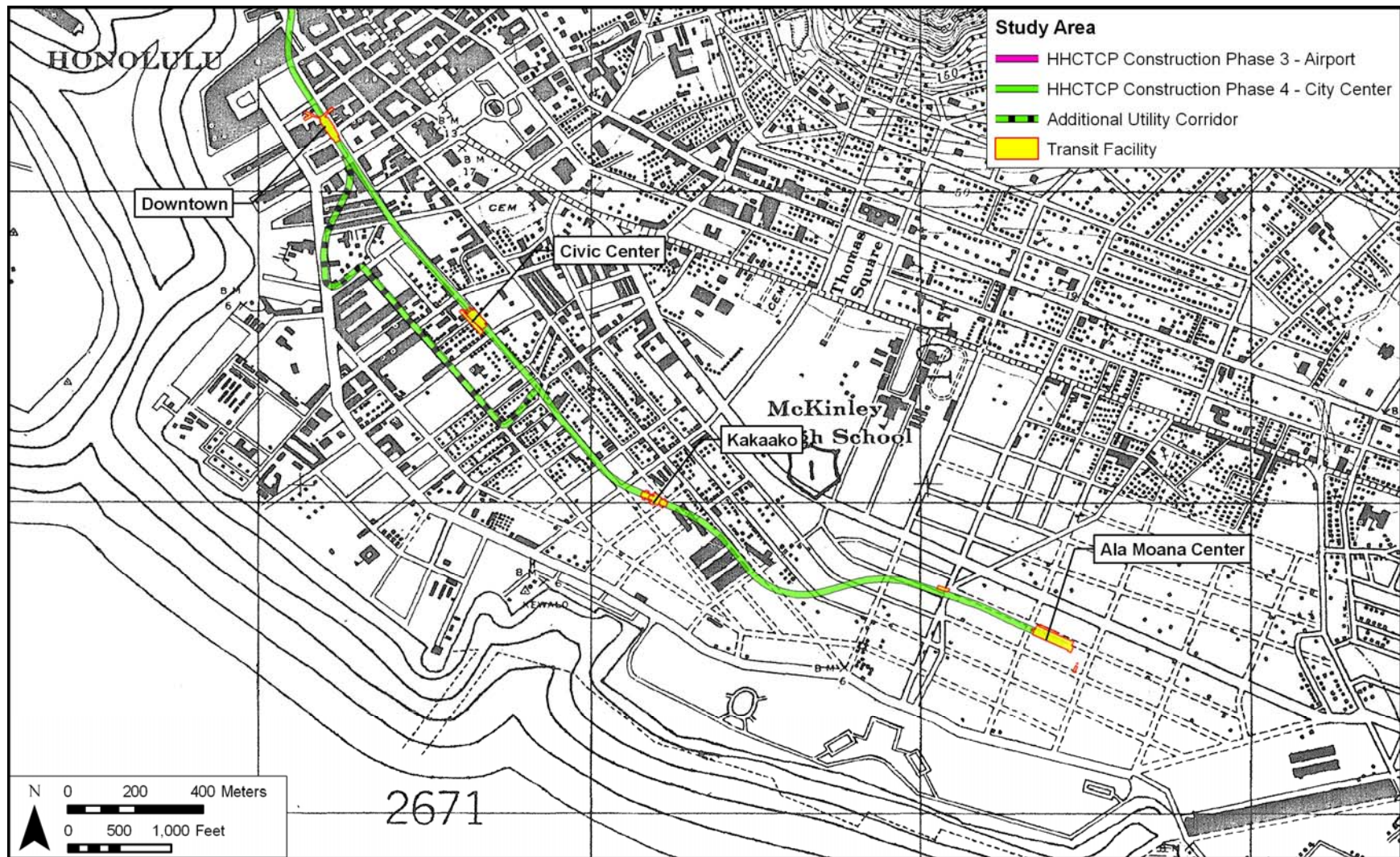


Figure 59. 1943 War Department topographic map, Honolulu Quadrangle, showing the Kaka'ako portion of the study area

